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WORK PLAN ADDENDUM NUMBER 4 FLEET TRAINING CENTER DETENTION POND DEMOLITION AND REPLACEMENT AT SOLID WASTE MANAGEMENT UNIT 14 NS MAYPORT FL

5/1/2000

CH2M HILL

Work Plan Addendum No. 04

Revision No. 00

Fleet Training Center Detention Pond Demolition and Replacement at SWMU 14

Naval Station Mayport
Mayport, Florida

Contract No. N62467-98-D-0995
Contract Task Order No. 0036

May 2000

PREPARED FOR

Department of the Navy, Southern Division
Naval Facilities Engineering Command

2155 Eagle Drive
North Charleston, South Carolina 29406

Work Plan Addendum No. 04
Fleet Training Center Detention Pond Demolition and Replacement at SWMU 14

Naval Station Mayport
Mayport, Florida

Revision 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0036

Submitted to:

U.S. Naval Facilities Engineering Command Southern Division

Prepared by:

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May 2000

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Acronym List

µg/L	micrograms per liter
AALA	American Association for Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
ACO	Administrative Contracting Officer
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long Term Environmental Action Navy
CompQAP	Comprehensive Quality Assurance Plan
COTR	Contracting Officer's Technical Representative
CPM	Critical Path Method
CTO	Contract Task Order
EISOPQAM	*Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*
EPCRA	Emergency Planning and Community Right to Know
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FTC	Fleet Training Center
FID	flame ionization detector
FL-PRO	Florida Petroleum Residual Organic
ft bls	feet below land surface
GCTLs	Groundwater Clean-up Target Levels
HDPE	high density polyethylene
IRCDQM	Installation Restoration Chemical Data Quality Manual
J.A. Jones	J.A. Jones Environmental Services Company
LNAPL	light non-aqueous phase liquid
mg/L	milligrams per liter
mil	mille
MSDS	Material Safety Data Sheet
NFESC	Naval Facilities Engineering Service Center
NIST	National Institute Of Standards And Technology
NPDES	National Pollutant Discharge Elimination System

Acronym List (Continued)

NS	Naval Station
NTR	Navy Technical Representative
NVLAP	National Voluntary Laboratory Accreditation Program
PAH	poly-nuclear aromatic hydrocarbon
PCBs	poly-chlorinated biphenyl
PPE	personal protective equipment
ppm	parts per million
QC	quality control
RCI	reactivity, corrosivity, ignitability
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
Southern Division, NAVFAC	Department of the Navy, Southern Division Naval Facilities Engineering Command
SVOA	semi-volatile organic aromatic compound
SWMU	Solid Waste Management Unit
T&D	transportation and disposal
TCLP	Toxicity Characteristic Leaching Procedure
TRPH	total recoverable petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOA	volatile organic aromatic compound

1.0 Introduction

CH2M HILL Constructors, Inc./J.A. Jones Environmental Services Company (CCI/J.A. Jones) has been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (Southern Division, NAVFAC), to prepare this site-specific Work Plan Addendum under Remedial Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0036. The purpose of this Work Plan Addendum is to outline the procedures to be used to complete the demolition and replacement of the Fleet Training Center (FTC) Detention Pond in the vicinity of Solid Waste Management Unit (SWMU) 14 located at Naval Station (NS) Mayport in Mayport, Florida. This Work Plan Addendum serves as a site-specific supplement to the NS Mayport Basewide Work Plan.

The scope of work under this CTO is to demolish the existing FTC detention pond and remove approximately 250 tons of petroleum impacted soil beneath it; and replace it with a detention pond consistent with the capacity of the existing structure and in accordance with the design prepared as part of this CTO.

This Work Plan Addendum is organized into seven sections of text and five appendices as follows.

Section 1.0 Introduction includes the site history, the required scope of work, and the project schedule. A detailed project schedule is provided in Appendix A of this Work Plan Addendum. The Basewide Work Plan provides a brief description of the reporting requirements under this Contract.

Section 2.0 Sampling and Analysis Plan (SAP) provides project sample locations, sample collection frequency, and the required laboratory analyses for samples collected during project activities. The Basewide Work Plan outlines the sample collection methodology including sample handling, labeling, and required collection of quality assurance and quality control samples.

Section 3.0 Waste Management Plan discusses the characterization, disposal, onsite management, and transportation of wastes (i.e., excavated petroleum-impacted soil) encountered or generated during project activities.

Section 4.0 Environmental Protection Plan of the Basewide Work Plan addresses the Environmental Protection Plan for all work completed at NS Mayport.

Section 5.0 Site Health and Safety Plan of the Basewide Work Plan addresses project-specific health and safety issues for the construction activities to be completed at NS Mayport. A site-specific health and safety plan that addresses the work described in this Work Plan Addendum is introduced in Section 5.0 and provided as a standalone document in Appendix B.

Section 6.0 Quality Control Plan includes the submittal register that lists the project-related submittals and their projected submittal date. The site-specific project organization for this CTO is also included in this section. All other quality control information is contained in the

Basewide Work Plan, including information on the quality administrators, the project organization for the work to be completed at NS Mayport, and the definable features of work for each project site.

Section 7.0 Technical Specifications includes a list of technical specifications that apply to the work described in this Work Plan Addendum. The listed specifications are provided in Appendix D.

The following support documents are presented as appendices to this Work Plan Addendum.

- Appendix A CPM Project Schedule
- Appendix B Health and Safety Plan
- Appendix C QA/QC and Waste Management Attachments
- Appendix D Technical Specifications
- Appendix E Construction Drawings

1.1 Site History and Project Objectives

The FTC is located at NS Mayport, Mayport, Florida. The project site consists of a concrete apron constructed in stages between the mid 1960s and the mid 1980s. Within the apron are abandoned facilities used until recently for training of fire fighters. These facilities include buildings, tank remnants, two circular fire burn mats, and miscellaneous utility structures. Petroleum contaminated soil and groundwater has resulted at the facility from past activities that included firefighter training using gasoline fires. The plume of subsurface contaminated soil and groundwater associated with SWMU 14 has extended beneath the apron. New environmentally safe training facilities have been constructed on parcels adjacent to the project site resulting in permanent suspension of all fire training activities on this site.

The existing concrete apron is graded to drain to a series of inlets that tie to an underground drainage collection system. The most recent improvements to this facility, which were performed in the mid-1980s, provide for piping in this collection system to convey the runoff to an underground control structure designed to detain the initial runoff in a wet well and concrete detention pond. Once the detained volume reaches a critical elevation in the control structure, the remaining runoff overtops a weir and discharges to the St. Johns River. The concrete pond and wet well detain the first flush of runoff, then discharge larger storms over the weir in the control structure to the St. Johns River. The detained volume in the wet well and concrete pond is pumped to a newly constructed treatment pond with an underdrain system located just west of the site. This pumped volume is treated by the underdrain system and then discharges to the St. John's River via a nearby manhole.

In May of 1997, URS Greiner designed a "repair" to account for the residual build-up of fueling products not only on the existing apron and in the existing collection system, but also present in the underlying groundwater plume associated with SWMU 14. The apron was cleaned and sealed, the drainage structures and piping received a polyester resin, non-porous liner; and the control structure, wet well, and concrete pond received an elastomeric surface coating system. The implementation of these sealers/liners was intended to prevent the presence of any residual contaminants in the stormwater runoff.

Since the repair was implemented, fluctuations in the water table caused the elastomeric surface coating system applied to the concrete detention pond to fail. This groundwater plume appears to have infiltrated the concrete pond through leaking joints in the failed elastomeric surface coating resulting in a sheen on the detained pond water. The scope described in this Statement of Work includes the demolition and removal of the existing detention pond, excavation of the contaminated soil beneath the detention pond and replacement with a watertight stormwater detention pond in accordance with the design specifications generated as part of the scope of this task order.

The RCRA Facility Investigation, Group III SWMUs conducted from March through October 1995 indicated the presence of the following contaminant concentrations in the soil and groundwater as listed in Table 1-1.

TABLE 1-1
Chemicals of Concern in Soil and Groundwater

Chemicals of Concern	Maximum Concentration
Soil	
2-Butanone	16 µg/L
Ethylbenzene	4 µg/L
Naphthalene	3,700 µg/L
Toluene	32 µg/L
Total Xylenes	13 µg/L
Groundwater	
Benzene	7.3 µg/L
Ethylbenzene	18.4 µg/L
Naphthalene	4 µg/L
Toluene	202 µg/L
Total Xylenes	91.5 µg/L

µg/L = micrograms per liter

The installation of the replacement pond is based on a design prepared by CCI in January 2000. The scope of work includes:

- Identification and avoidance of all aboveground and underground utilities
- Temporary plugging and redirection of all stormwater conduits that discharge into the existing detention pond
- Demolition of the existing stormwater detention pond
- Excavation, transportation, and disposal of an estimated 250 tons of petroleum impacted soil beneath the pond
- Dewatering, as necessary

- Backfill and compaction of excavated area as necessary to support construction of a new stormwater detention pond
- Construction of a new stormwater detention pond with the capacity of the existing structure and associated return to service of all existing utilities, drainage pipes, and catch basins
- Post-construction influent/effluent testing
- Preparation of a Construction Documentation Report and As-built Construction Drawings
- Site restoration
- Decontamination of personnel and equipment

The Technical Specifications required to complete the scope of work are provided in Appendix D of this Work Plan Addendum.

The objective of the demolition and replacement task is to remove the existing stormwater detention pond and replace it with a "water tight" pond of the same capacity in order to eliminate the possibility of impacted groundwater entering the stormwater detention pond and subsequently discharging through the storm sewer system to the St. Johns River.

1.2 Scope of Work

1.2.1 Mobilization and Setup of Temporary Facilities and Site Controls

This task will consist of the mobilization of personnel and equipment to the work site and the establishment of temporary facilities, including portable sanitary facilities, soil and concrete staging/stockpile areas, decontamination area, site refuge area, and equipment laydown area. Project management and scheduling activities, including contractor coordination, will be achieved from the CCI/J.A. Jones office located in the vicinity of the project site, which will be equipped with telephone capabilities. Office supplies, field equipment, and personal protective equipment (PPE) will be stored a job trailer staged in the vicinity of the project site.

Prior to the commencement of any trenching activities, site controls including construction barricades and roadway signs will be installed and the soil staging/stockpile area, decontamination area, site refuge area, and equipment laydown area will be prepared as shown on the Site Plan (Figure 1-1). If necessary, security fencing will also be installed. The excavation areas at the work site will be marked with paint and stakes, as appropriate, and an underground utility survey will be conducted by contacting Sunshine State One Call of Florida and the NS Mayport Facilities Engineering Division. CCI/J.A. Jones will coordinate with both the NS Mayport Public Works Center and the Resident Officer in Charge of Construction (ROICC) to acquire utility layout plans of the area. Utilities that traverse the excavation area will be physically verified by the locating service. All marked utility lines in excavation areas will be uncovered with hand tools. In addition, the progress of excavation conducted with machinery will be continuously monitored for evidence of subsurface obstructions. Except in the vicinity of marked underground utilities, excavation and trenching will be conducted using a backhoe or trackhoe excavator.

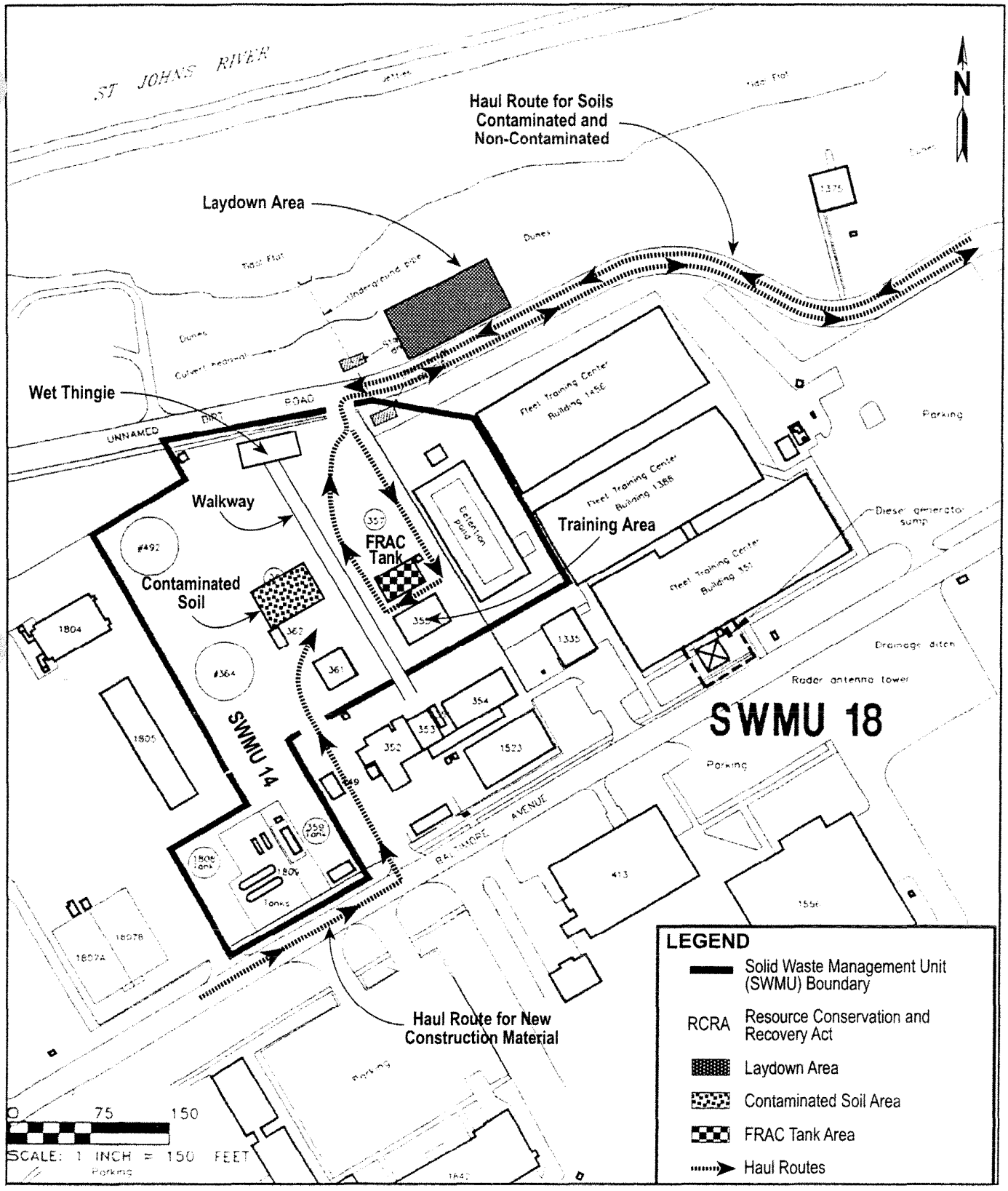

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Figure 1-1
Site Plan

Uncovered utilities will be supported to prevent damage. Any resulting damage to identified underground utilities or subsurface structures will be immediately reported to the ROICC and subsequently repaired by CCI/J.A. Jones via methods approved by the ROICC.

Erosion control measures will be implemented if soil is stockpiled or the excavation remains open overnight. Plastic sheeting, silt fences, and hay bales will be available onsite should weather conditions warrant covering and berming stockpiled material to control runoff or dust emissions. Figure 1-2 provides a detail of the staked silt fencing that will be installed around the perimeter of the open excavation. Figure 1-3 shows a detail of the temporary barricade fencing to be placed around the excavation when open overnight. Figure 1-4 presents a detail of the temporary containment of excavated soil in the event that soil is staged at the site overnight. This temporary containment will consist of straw bales around the perimeter of the staging area and a polyethylene liner and cover.

1.2.2 Demolition of Existing Stormwater Detention Pond

Prior to demolition, all stormwater pipes that currently discharge into the existing stormwater detention pond will be plugged and stormwater runoff diverted away from the construction site. The existing detention pond will be demolished in accordance with the technical specifications provided in Appendix D. The demolition of existing concrete will be accomplished by pneumatic hammer and the debris staged using an excavator and a loader. The staging area is located as shown on Figure 1-1.

Concrete debris will be decontaminated and staged for disposal offsite at a municipal landfill. Any groundwater removed during demolition activities and any decontamination water will be containerized, properly labeled, and sampled in accordance with Section 2.0 Sampling and Analysis Plan, and transported and disposed of at an offsite facility permitted to accept the waste in accordance with Section 3.0 Waste Management Plan.

Any utilities (i.e., light poles), drainage pipes, and catch basins that interfere with demolition activities will be temporarily removed during the demolition and returned to their original condition once concrete and soil removal activities are completed. Similarly, the existing sidewalk will be repaired/replaced as required. Note that the cooling tower located adjacent to the southeast corner of the detention pond will not be disturbed during the course of this work.

1.2.3 Soil Excavation, Transportation, and Disposal

Excavation, filling, and backfilling activities will be performed in accordance with the technical specifications provided in Appendix D. The maximum depth of excavation will be approximately 48 inches below land surface (bls). Because the excavation floor will be less than 5 feet bls, shoring and/or benching will not be required.

The existing detention pond is located over petroleum contaminated soil and groundwater. Subsequent to demolition, all exposed soil above the water table will be excavated using an excavator and a loader and either direct-loaded or temporarily stockpiled at the site prior to transportation and disposal at a facility permitted to accept the waste. Stockpile areas will be lined with 20-mille (mil) high-density polyethylene (HDPE) and bermed to prevent surface water contact with the stockpile. All stockpiles will be covered with 20-mil HDPE at

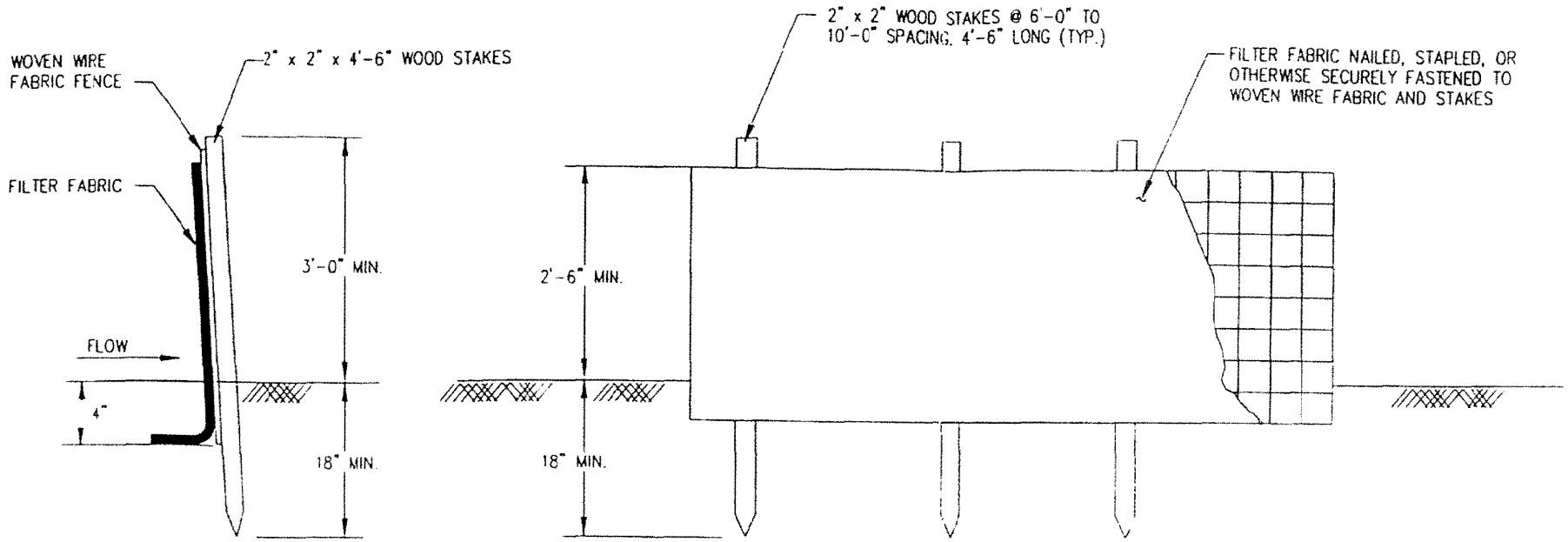
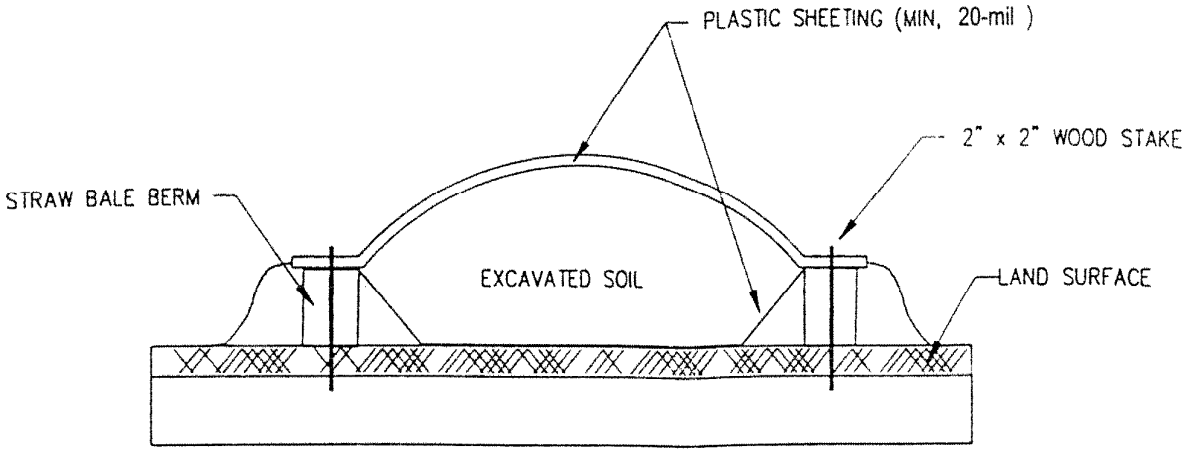


Figure 1-2
Staked Silt Fence Detail



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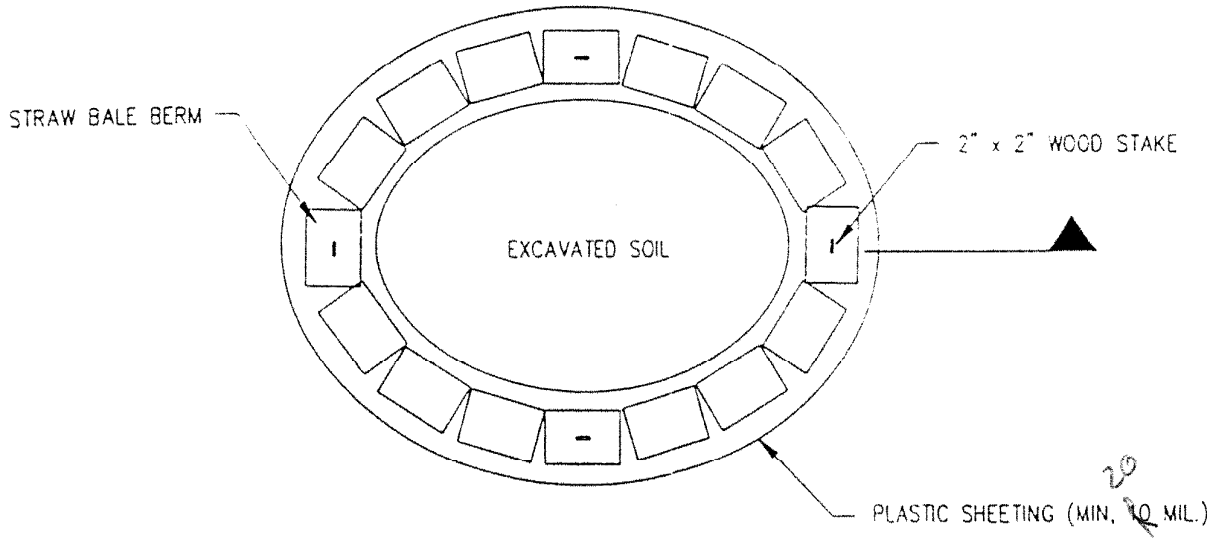

PLAN

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Figure 1-3
Temporary Containment of Excavated Soil Detail

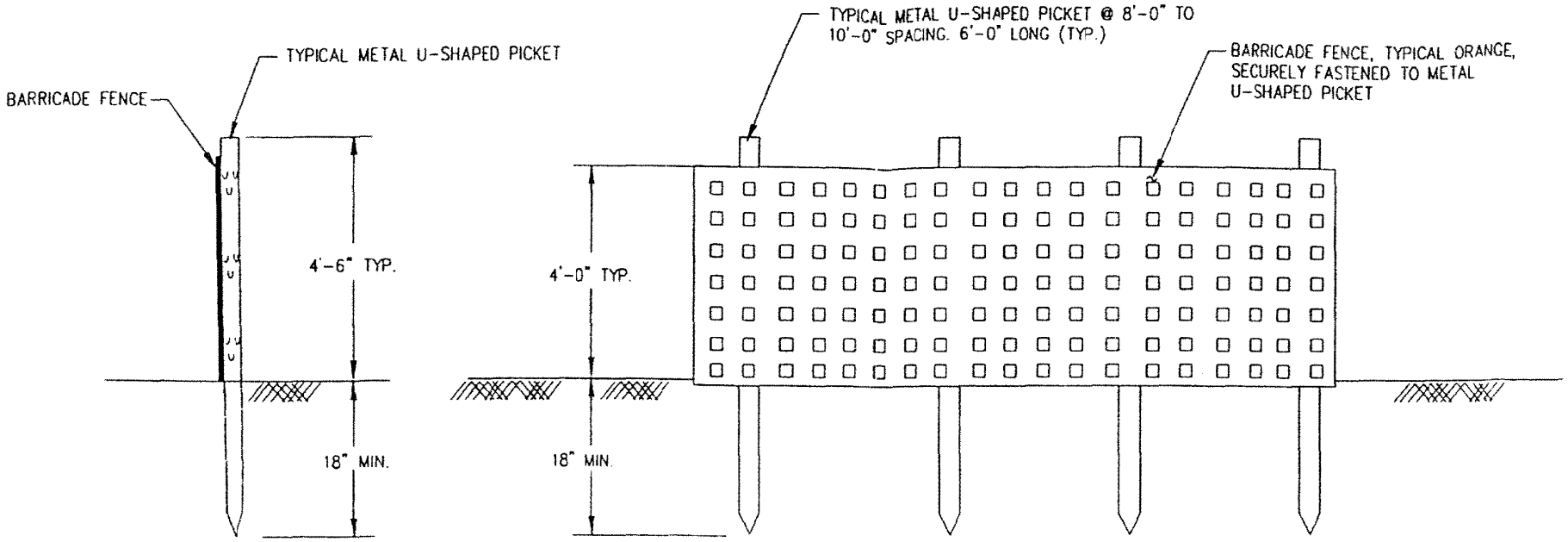


Figure 1-4
Barricade Fence Detail

the end of each day and during rain events to prevent drainage from the stockpile to the surrounding area. In the event that rainfall occurs during excavation activities, standing water will be removed prior to the placement of material or backfill. In areas of known petroleum-impacted soil, the water will be containerized, properly labeled, and sampled and analyzed in accordance with Section 2.0 Sampling and Analysis Plan, and transported and disposed of offsite at a facility permitted to accept the waste.

It is anticipated that dewatering activities will not be required at the site since the soil is to be removed to the groundwater table. However, if dewatering is required during the soil excavation activity, a dewatering plan will be prepared and submitted to the Navy for approval in accordance with Section 1.2.5 Dewatering.

Compaction testing for subgrade and backfill will be required in accordance with the specifications provided in Appendix D.

1.2.4 Construction of New Stormwater Detention Pond

A new stormwater detention pond will be constructed in the same location as the existing pond and in accordance with the technical specifications provided in Appendix D and the drawings provided in Appendix E and to include dewatering, if necessary. The groundwater table elevation will be field verified prior to construction activities. If required, a dewatering plan will be prepared and submitted to the Navy for approval in accordance with Section 1.2.5 Dewatering.

The new construction will include installation of the new concrete detention pond, storm drain and associated piping. Concrete formwork and grade preparation will begin for the base slab for the detention pond. Concrete placement will be scheduled in two placements in a checkerboard pattern in accordance with Drawing S-1 (Appendix E). There will be a 7-day curing period between each placement of adjacent slabs.

Compaction testing for backfill and subgrade; concrete testing (slump, air entrainment, and concrete compressive strength cylinders), and post construction leak testing will be required in accordance with the specifications provided in Appendix D. Submittals required in conjunction with these tests are listed on the Submittal Register provided in Appendix C.

1.2.5 Dewatering

If necessary during either soil removal or detention pond construction activities, a dewatering plan will be prepared and submitted to the Navy that will describe:

- Management of the groundwater from the time it is extracted until it has been disposed to include temporary storage, transport, and treatment
- Method of physical extraction of contaminated groundwater (i.e., pump type)
- Location and depths of all subsurface components to be used in the dewatering system (i.e. well points, trench drains, etc.)
- Operating parameters of the dewatering system including: gallon per minute flow rate(s), per day hours of operation; total days of operation over the life of the project; and estimated total volume of groundwater to be extracted over the life of the project

- Method for transportation and disposal of extracted groundwater and any permits that will be necessary (i.e. , offsite treatment facility or discharge under National Pollutant Discharge Elimination System [NPDES] permit);
- Sampling and analysis associated with the dewatering activities

The dewatering system will be installed for stability of soils for restoration compaction and/or installation of the new detention pond, storm drain, and associated piping. The dewatering system will be demobilized as soon as adequate compaction is obtained and the grade is established.

1.2.6 Site Restoration

Site restoration activities will involve returning to existing conditions all of the components of the stormwater system facility, including, but not limited to:

- Existing reinforced concrete pipes and storm structures
- Light pole and associated electrical service
- Utilities associated with the cooling tower
- Monitoring wells
- Fences
- Concrete sidewalk located within or adjacent to the limits of construction
- Pavement located within or adjacent to the limits of construction

Areas excavated or disturbed during demolition and replacement activities will be backfilled with clean granular fill material and returned to original grade. Upon completion of backfill operations, CCI/J.A. Jones will restore the site to its previous condition. If grass was present, the site will be graded to provide drainage, fertilized, and seeded with landscape grasses (i.e., bahia) commonly used in the area. The area then will be covered with mulch to retain moisture and to allow the seed to germinate. Restoration of disturbed areas of asphalt or concrete will include subgrade compaction to prevent subsidence, followed by the replacement of like-material asphalt or concrete.

1.2.7 Decontamination

Decontamination of personnel and equipment will be performed in accordance with: the Health and Safety Plan (Appendix B); the applicable provisions of the US EPA, Region 4, *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* (EISOPQAM) dated May 1996; and the applicable provisions of 29 Code of Federal Regulations (CFR) 1910.120.

Personnel and equipment will be properly decontaminated to remove all contamination that may be adhering to it as a result of all demolition and construction activities. Personnel decontamination will be provided to the level appropriate for the work task and site contaminants. Equipment which contacts soil and waste directly will be cleaned prior to leaving the exclusion zone. Decontamination will consist of soil and free liquid removal and final rinsing. The Site Health and Safety specialist (SHSS) will inspect each person and piece of equipment prior to its leaving the exclusion zone and will make a record of this inspection. Inspections will be completed to assure that no gross amounts of soils or debris

are adhered to equipment and that no free liquid is leaking from it when exiting the site exclusion zone.

Any water accumulated during the decontamination process will be containerized, sampled in accordance with Section 2.0 Sampling and Analysis Plan, and transported and disposed of offsite at a facility permitted to accept the waste. All debris generated by remediation activities will be properly contained and disposed of at a facility permitted to accept the waste. Section 3.0 Waste Management Plan describes requirements for onsite management of all wastestreams, including containers.

1.2.8 Demobilization

During demobilization, temporary facilities, utilities, and equipment will be removed from the site. In addition, any debris or solid waste material remaining from construction activities will be removed and properly disposed of offsite at a facility permitted to accept the waste.

1.3 Project Schedule

The major project activities and estimated durations for each are outlined below.

- Pre-construction Meeting/Submittal Preparation/Reviews 30 days
- Mobilization 2 days
- Site Controls (temporarily re-route stormwater) 5 days
- Demolish Existing Detention Pond 5 days
- Contaminated Soil Removal 6 days
- Install Detention Pond 25 days
- Demobilization 2 days
- Post-construction submittals 30 days

CCI/J.A. Jones anticipates the total project duration (from pre-construction conference through submittal of the Construction Documentation Report) will be approximately 90 days. This proposed schedule may vary depending on the actual conditions encountered in the field. Appendix A provides a schedule for the work to be performed.

1.4 Communications Plan

A communication matrix outlining the lines of communications for Southern Division, NAVFAC and CCI/J.A. Jones is presented in Table 1-2. Table 1-3 provides a project personnel directory.

TABLE 1-2
Communications Matrix

CCI/J.A. Jones Position	Navy Direct Report
Scott Newman, Program Manager	Eva Clement, Contracting Officer Jimmy Jones, COTR Richard Stanley, ACO
Philip Altman, Senior Project Manager	Jimmy Jones, COTR Richard Stanley, ACO
Sam Ross, CTO Project Manager	Adrienne Wilson, Remediation Project Manager (RPM) Larry Blackburn, NTR Randy Bishop, NS Mayport

TABLE 1-3
Project Personnel Directory

Contact	Company
Scott Newman Philip Altman Marsha Robinson Bob Nash Theresa Rojas	CH2M HILL Constructors, Inc 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
JoAnne Snelson Sam Ross Mike Halil	J.A. Jones Environmental Services Company 8936 Western Way, Suite 10 Jacksonville, FL 32256 904/363-0911
Eva Clement	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5518
Mr. Richard Stanley	As above 843/820-5939
Mr. Jimmy Jones	As above 843/820-5544
Ms. Adrienne Wilson	As above 843/820-5582
Larry Blackburn	Southern Division Naval Facilities Engineering Command Resident Officer in Charge of Construction P. O. Box 139, Building 13 NAS Jacksonville, FL 32212-0139 904/542-5571, ext. 117 904/237-1868 (mobile)
Randy Bishop	Staff Civil Engineer Environmental Division Building ~~1538~~ 2021 NS Mayport, FL 32228 904/270-6730

Commanding Officer
Naval Station
Mayport N4E4
PO BOX 280001
Mayport, FL
32228-0001

1.5 Traffic Control Plan

Traffic control at the site will be the responsibility of the CCI/J.A. Jones Site Superintendent. CCI/J.A. Jones will minimize disturbance to Base operations during project activities. CCI/J.A. Jones will consult with Navy personnel to evaluate site access, placement of equipment, and traffic flow to minimize the impact of this work on Station operations. CCI/J.A. Jones will review all Navy regulations and standard operating procedures regarding vehicle movement and control. Traffic will enter and exit the construction site as shown on Figure 1-1.

Prior to the commencement of site activities, traffic barricades, signs, and road guards will be placed to prohibit traffic around the construction area. Road signs will be placed to warn traffic entering and leaving the area of the ongoing construction activities.

2.0 Sampling and Analysis Plan

The Sampling and Analysis Plan (SAP) provided in this Work Plan Addendum outlines the required sampling activities associated with the demolition, soil removal, and replacement phases of this project at NS Mayport. This SAP outlines the required locations, frequency, and analyses for the pond effluent samples collected during final testing of the pond. In addition, this SAP provides the required analyses for disposal characterization for wastes generated during demolition and construction activities.

The Basewide Work Plan provides sample collection frequency and sampling methodology for samples collected during the demolition, soil removal, and replacement phases of this project; sample quality assurance/quality control procedures to be maintained during all sample collection activities; and sample equipment decontamination procedures.

2.1 Sample Collection and Analysis Methods

It is assumed that the groundwater is contaminated only with petroleum constituents and no evidence of listed waste exists for this site. If listed waste is discovered to have been or is found, additional analyses may be required. Samples will be collected in accordance with FDEP Standard Operating Procedures, Department of Environmental Regulation QA-001/92; and US EPA, Region 4, EISOPQAM, dated May 1996. The sampling team will have a Florida-approved Comprehensive Quality Assurance Plan (CompQAP).

2.1.1 Waste Characterization and Incidental Wastestream Sampling and Analyses

2.1.1.1 Soil

Soil characterization samples will be collected to evaluate handling, transportation, and disposal requirements for the disposal of the petroleum-contaminated soil encountered during detention pond demolition and soil removal activities. The excavated soil will be screened using a flame ionization detector (FID) in accordance with Section 2.0 Sampling and Analysis Plan of the Basewide Work Plan.

Soil which exhibits an FID reading of greater than 10 parts per million (ppm) above ambient air levels will be segregated, stockpiled, and sampled in accordance with Section 2.0 Sampling and Analysis Plan of the Basewide Work Plan. One composite sample of the stockpile will be prepared from five "grabs" at random points throughout the stockpile in accordance with Section 2.0 Sampling and Analysis Plan of the Basewide Work Plan, delivered to a Navy-approved and FDEP-certified laboratory; and analyzed for the parameters listed in Table 2-1. Soil that exhibits an FID reading of less than 10 ppm above ambient air levels can be used as fill material.

Navy Level C Quality Control and CCI Level A data package will be required along with appropriate project specific quality objectives samples for the required soil analyses as specified in Table 2-2. All analytical data will be submitted by both hard copy and electronic file.

TABLE 2-1
Summary of Field Sampling and Analysis

Sample Description	Sample Location(s)	No. of Events	No. of Samples	Frequency	Analytical Method	Required Turnaround Time
Pond Sampling	Pond Influent/Effluent	2	3	Prior to demolition and Following replacement	(2)	7 cal. Day
Waste Characterization, Incidental Wastestream, and Dewatering	Soil	1 (minimum)	1 (minimum)	One composite of five "grabs" from random sampling points per 200 cubic yards of Stockpile or One per Container and As Required by the Disposal Facility	(1)	7 cal. Day
	Water	1 (minimum)	1 (minimum)	One per 6 Drums or One per Container and As Required by the Disposal Facility	(2)	7 cal. Day
Quality Control Sampling	Equipment Blanks	Each Sampling Event	As Required	(3)	For Each Required Analysis	As Required
	Trip Blanks	Each Sampling Event	As Required	(4)	For Each Required Analysis	As Required
	Duplicates	Each Sampling Event	As Required	(5)	For Each Required Analysis	As Required

Notes:
(1) TCLP VOA (USEPA Method 1311/8260B), TCLP SVOA (USEPA Method 625/8270C), TCLP Metals (USEPA Method 7470A), TCLP Pesticides (USEPA Method 608/8081A), TCLP Herbicides (USEPA Method 608/8082), PCBs (USEPA Method 200.7/6010B), Mercury (USEPA Method 335.3), TRPH (FL-PRO), and RCI according to SW-846 Chapter 7.
(2) VOA (USEPA Method 8260B), SVOA (USEPA Method 8270C), RCRA Metals to include Mercury (USEPA Method 6010B/7470A), Pesticides (USEPA Method 8081A), Herbicides (USEPA Method 8151A), PCBs (USEPA Method 8082), and TRPH (FL-PRO).
(3) Pre-cleaned equipment blank samples will be collected at a minimum frequency of 5% times the total number of samples collected for an analysis. Field-cleaned equipment blank samples will be collected at a minimum frequency of 5% times the total number of samples collected for an analysis.
(4) Trip blank samples will be provided at minimum frequency of one per sample cooler.
(5) Field duplicate samples will be collected at a minimum frequency of 10% times the total number of samples collected for an analysis.

Legend:
FL-PRO – Florida Petroleum Residual Organic Method
PCBs – Poly-chlorinated Biphenyl
PAHs – Poly-nuclear Aromatic Hydrocarbons
RCI – Reactivity, Corrosivity, Ignitability
RCRA – Resource Conservation and Recovery Act
SVOA – Semi-volatile Organic Aromatic Compound
TRPH – Total Recoverable Petroleum Hydrocarbons
TCLP – Toxicity Characteristic Leaching Procedure
USEPA – United States Environmental Protection Agency
VOA – Volatile Organic Aromatic Compound

TABLE 2-2
Project Specific Quality Objectives

		Project Action Limits	Minimum PQL	Accuracy Limits MS/MSD Recoveries	Precision Limits MS/MSD Deviation	Accuracy Limits LCS Recoveries	Precision Limits Field Dup Deviation	Completeness Limits
Method No	Analyte / Component	TCLP	TCLP	TCLP	TCLP	TCLP	TCLP	TCLP
TCLP Volatiles		(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)
8260B	1,1-Dichloroethylene	0.7	0.1	50-150	<50	70-130	<50	90
8260B	1,2-Dichloroethane	0.5	0.1	50-150	<50	70-130	<50	90
8260B	Benzene	0.5	0.1	50-150	<50	70-130	<50	90
8260B	Carbon Tetrachloride	0.5	0.1	50-150	<50	70-130	<50	90
8260B	Chlorobenzene	100	20	50-150	<50	70-130	<50	90
8260B	Chloroform	6	1	50-150	<50	70-130	<50	90
8260B	Methyl Ethyl Ketone	200	20	50-150	<50	70-130	<50	90
8260B	Tetrachloroethylene	0.7	0.7	50-150	<50	70-130	<50	90
8260B	Trichloroethylene	0.5	0.1	50-150	<50	70-130	<50	90
8260B	Vinyl Chloride	0.2	0.05	50-150	<50	70-130	<50	90
TCLP Semi-Volatiles		(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)
8270C	1,4-Dichlorobenzene	7.5	1	50-150	<50	70-130	<50	90
8270C	2,4,5-Trichlorophenol	400	80	50-150	<50	70-130	<50	90
8270C	2,4,6-Trichlorophenol	2	0.4	50-150	<50	70-130	<50	90
8270C	2,4-Dinitrotoluene	0.13	0.02	50-150	<50	70-130	<50	90
8270C	Cresol	200	40	50-150	<50	70-130	<50	90
8270C	Hexachlorobenzene	0.13	0.02	50-150	<50	70-130	<50	90
8270C	Hexachloroethane	3	0.5	50-150	<50	70-130	<50	90
8270C	Hexachlorobutadiene	0.5	0.4	50-150	<50	70-130	<50	90
8270C	Nitrobenzene	2	0.4	50-150	<50	70-130	<50	90
8270C	Pentachlorophenol	100	80	50-150	<50	70-130	<50	90
8270C	Pyridine	5	1	50-150	<50	70-130	<50	90
TCLP Pesticides		(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)
8081A	Endrin	0.02	0.004	50-150	<50	70-130	<50	90
8081A	Lindane	0.4	0.08	50-150	<50	70-130	<50	90
8081A	Methoxychlor	10	1	50-150	<50	70-130	<50	90
8081A	Toxaphene	0.5	0.1	50-150	<50	70-130	<50	90
8081A	Chlordane	0.03	0.005	50-150	<50	70-130	<50	90
8081A	Heptachlor and its Hydroxide	0.008	0.001	50-150	<50	70-130	<50	90

TABLE 2-2
Project Specific Quality Objectives

		Project Action Limits	Minimum PQL	Accuracy Limits MS/MSD Recoveries	Precision Limits MS/MSD Deviation	Accuracy Limits LCS Recoveries	Precision Limits Field Dup Deviation	Completeness Limits
Method No	Analyte / Component	TCLP	TCLP	TCLP	TCLP	TCLP	TCLP	TCLP
TCLP Herbicides		(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)
8151A	2,4-D	10	2	50-150	<50	70-130	<50	90
8151A	2,4,5-TP	1	0.2	50-150	<50	70-130	<50	90
TCLP Metals		(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)
6010B	Arsenic	5	1	50-150	<50	70-130	<50	90
6010B	Barium	100	20	50-150	<50	70-130	<50	90
6010B	Cadmium	1	0.2	50-150	<50	70-130	<50	90
6010B	Chromium	5	1	50-150	<50	70-130	<50	90
6010B	Lead	5	1	50-150	<50	70-130	<50	90
7470	Mercury	0.2	0.04	50-150	<50	70-130	<50	90
6010B	Selenium	1	0.2	50-150	<50	70-130	<50	90
6010B	Silver	5	1	50-150	<50	70-130	<50	90
Characteristics		(mg/kg)	(mg/kg)	(%)	(%)	(%)	(%)	(%)
7.3	Reactive Sulfide	500	50	N/A	<50	N/A	<50	90
7.3	Reactive Cyanide	250	25	N/A	<50	N/A	<50	90
1010	Ignitability (Pensky Martens)	< 60 C or <140°F	40 C or 100°F	N/A	<50	N/A	<50	90
1020A	Ignitability (Setaflash)	< 60 C or <140°F	40 C or 100°F	N/A	<50	N/A	<50	90
1030	Ignitability of Solids	< 60 C or <140°F	40 C or 100°F	N/A	<50	N/A	<50	90
9040	pH (Corrosivity)	≤2 ; ≥12.5	N/A	N/A	<50	N/A	<50	90
Miscellaneous				(%)	(%)	(%)	(%)	(%)
9095A	Paint Filter	Pass	Pass/Fail	N/A	N/A	N/A	N/A	90

TABLE 2-2
Project Specific Quality Objectives

Method No	Analyte / Component	Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
TCL VOLATILES BY GC/MS		ug/L	ug/kg	ug/L**	ug/kg	%	%	%	%	%	%	%	%	%	%
8260B	Chloromethane	NS	NS	1.3	10	60-140	20-150	<30	<50	38-116	38-116	<50	<75	95	90
8260B	Bromomethane	NS	NS	1.1	10	60-140	20-150	<30	<50	49-117	49-117	<50	<75	95	90
8260B	Vinyl Chloride	NS	NS	1.1	10	60-140	20-150	<30	<50	31-121	31-121	<50	<75	95	90
8260B	Chloroethane	NS	NS	1	10	60-140	20-150	<30	<50	62-116	62-116	<50	<75	95	90
8260B	Methylene Chloride	NS	NS	0.3	10	60-140	20-150	<30	<50	55-126	55-126	<50	<75	95	90
8260B	Acetone	NS	NS	10	10	60-140	20-150	<30	<50	43-165	43-165	<50	<75	95	90
8260B	Carbon Disulfide	NS	NS	10	10	60-140	20-150	<30	<50	76-119	76-119	<50	<75	95	90
8260B	1,1-Dichloroethene	NS	NS	1.2	10	60-140	20-150	<30	<50	54-128	54-128	<50	<75	95	90
8260B	1,1-Dichloroethane	NS	NS	0.4	10	60-140	20-150	<30	<50	62-141	62-141	<50	<75	95	90
8260B	cis-1,2-Dichloroethene	NS	NS	1.2	10	60-140	20-150	<30	<50	70-131	60-141	<50	<75	95	90
8260B	trans-1,2-Dichloroethene	NS	NS	0.6	10	60-140	20-150	<30	<50	61-138	51-148	<50	<75	95	90
8260B	Chloroform	NS	NS	0.3	10	60-140	20-150	<30	<50	65-129	65-129	<50	<75	95	90
8260B	1,2-Dichloroethane	NS	NS	0.6	10	60-140	20-150	<30	<50	68-135	68-135	<50	<75	95	90
8260B	2-Butanone	NS	NS	10	10	60-140	20-150	<30	<50	50-163	50-163	<50	<75	95	90
8260B	1,1,1-Trichloroethane	NS	NS	0.8	10	60-140	20-150	<30	<50	68-135	68-135	<50	<75	95	90
8260B	Carbon Tetrachloride	NS	NS	2.1	10	60-140	20-150	<30	<50	67-125	67-125	<50	<75	95	90
8260B	Bromodichloromethane	NS	NS	0.8	10	60-140	20-150	<30	<50	68-135	58-145	<50	<75	95	90
8260B	1,2-Dichloropropane	NS	NS	0.4	10	60-140	20-150	<30	<50	76-132	76-132	<50	<75	95	90
8260B	Cis-1,3-Dichloropropene	NS	NS	1	10	60-140	20-150	<30	<50	70-122	70-122	<50	<75	95	90
8260B	Trichloroethylene	NS	NS	1	10	60-140	20-150	<30	<50	67-137	67-137	<50	<75	95	90
8260B	Dibromochloromethane	NS	NS	0.5	10	60-140	20-150	<30	<50	64-120	64-120	<50	<75	95	90
8260B	1,1,2-Trichloroethane	NS	NS	1	10	60-140	20-150	<30	<50	70-141	70-141	<50	<75	95	90
8260B	Benzene	NS	NS	0.4	10	60-140	20-150	<30	<50	51-139	51-139	<50	<75	95	90
8260B	trans-1,3-Dichloropropene	NS	NS	1.4	10	60-140	20-150	<30	<50	42-154	42-154	<50	<75	95	90
8260B	Bromoform	NS	NS	1.2	10	60-140	20-150	<30	<50	67-129	67-129	<50	<75	95	90
8260B	4-Methyl-2-Pentanone	NS	NS	10	10	60-140	20-150	<30	<50	77-119	77-119	<50	<75	95	90
8260B	2-Hexanone	NS	NS	10	10	60-140	20-150	<30	<50	47-165	47-165	<50	<75	95	90
8260B	Tetrachloroethylene	NS	NS	1.4	10	60-140	20-150	<30	<50	67-131	67-131	<50	<75	95	90
8260B	Toluene	NS	NS	1.1	10	60-140	20-150	<30	<50	31-137	31-137	<50	<75	95	90
8260B	1,1,2,2-Tetrachloroethane	NS	NS	0.4	10	60-140	20-150	<30	<50	55-138	55-138	<50	<75	95	90
8260B	Chlorobenzene	NS	NS	0.4	10	60-140	20-150	<30	<50	69-140	69-140	<50	<75	95	90
8260B	Ethylbenzene	NS	NS	0.6	10	60-140	20-150	<30	<50	59-140	59-140	<50	<75	95	90
8260B	Styrene	NS	NS	0.4	10	60-140	20-150	<30	<50	71-133	71-133	<50	<75	95	90
8260B	Xylenes, Total	NS	NS	1.3	10	60-140	20-150	<30	<50	68-133	68-133	<50	<75	95	90
8260B	4-Bromofluorobenzene (Surr)					75-125	65-135								
8260B	1,2-Dichloroethane-d4 (Surr)					62-139	52-149								
8260B	Toluene-d8 (Surr)					75-125	65-135								

TCL SEMI-VOLATILES BY GC/MS		ug/L	ug/kg	ug/L	ug/kg	ug/L	ug/kg	%	%	%	%	%	%	%	%
8270C	Phenol	NS	NS	10	330	60-140	20-150	<30	<50	25-125	25-135	<50	<75	95	90
8270C	Bis (2-chloroethyl) ether	NS	NS	10	330	60-140	20-150	<30	<50	44-125	34-135	<50	<75	95	90
8270C	2-Chlorophenol	NS	NS	10	330	60-140	20-150	<30	<50	41-125	31-135	<50	<75	95	90
8270C	1,3-Dichlorobenzene	NS	NS	10	330	60-140	20-150	<30	<50	36-125	26-135	<50	<75	95	90
8270C	1,4-Dichlorobenzene	NS	NS	10	330	60-140	20-150	<30	<50	30-125	25-135	<50	<75	95	90

TABLE 2-2
Project Specific Quality Objectives

		Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
Method No	Analyte / Component	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
8270C	1,2-Dichlorobenzene	NS	NS	10	330	60-140	20-150	<30	<50	42-155	32-135	<50	<75	95	90
8270C	2-Methylphenol	NS	NS	10	330	60-140	20-150	<30	<50	25-125	25-135	<50	<75	95	90
8270C	2,2'-Oxybis (1-Chloropropane) [bis (2-Chloroisopropyl) ether]	NS	NS	10	330	60-140	20-150	<30	<50	36-166	26-175	<50	<75	95	90
8270C	4-Methylphenol	NS	NS	10	330	60-140	20-150	<30	<50	33-125	25-135	<50	<75	95	90
8270C	N-Nitroso-di-n-propylamine	NS	NS	10	330	60-140	20-150	<30	<50	37-125	27-135	<50	<75	95	90
8270C	Hexachloroethane	NS	NS	10	330	60-140	20-150	<30	<50	25-153	25-163	<50	<75	95	90
8270C	Nitrobenzene	NS	NS	10	330	60-140	20-150	<30	<50	46-133	36-143	<50	<75	95	90
8270C	Isophorone	NS	NS	10	330	60-140	20-150	<30	<50	26-175	25-175	<50	<75	95	90
8270C	2-Nitrophenol	NS	NS	10	330	60-140	20-150	<30	<50	44-125	34-135	<50	<75	95	90
8270C	2,4-Dimethylphenol	NS	NS	10	330	60-140	20-150	<30	<50	45-139	35-149	<50	<75	95	90
8270C	Bis (2-chloroethoxy) methane	NS	NS	10	330	60-140	20-150	<30	<50	49-125	39-135	<50	<75	95	90
8270C	2,4-Dichlorophenol	NS	NS	10	330	60-140	20-150	<30	<50	46-125	36-135	<50	<75	95	90
8270C	1,2,4-Trichlorobenzene	NS	NS	10	330	60-140	20-150	<30	<50	44-142	34-152	<50	<75	95	90
8270C	Naphthalene	NS	NS	10	330	60-140	20-150	<30	<50	50-125	40-135	<50	<75	95	90
8270C	4-Chloroaniline	NS	NS	10	330	60-140	20-150	<30	<50	45-136	35-146	<50	<75	95	90
8270C	Hexachlorobutadiene	NS	NS	10	330	60-140	20-150	<30	<50	25-125	25-135	<50	<75	95	90
8270C	4-Chloro-3-methylphenol	NS	NS	10	330	60-140	20-150	<30	<50	44-125	34-135	<50	<75	95	90
8270C	2-Methylnaphthalene	NS	NS	10	330	60-140	20-150	<30	<50	41-125	31-135	<50	<75	95	90
8270C	Hexachlorocyclopentadiene	NS	NS	10	330	60-140	20-150	<30	<50	41-125	31-135	<50	<75	95	90
8270C	2,4,6-Trichlorophenol	NS	NS	10	330	60-140	20-150	<30	<50	39-128	29-138	<50	<75	95	90
8270C	2,4,5-Trichlorophenol	NS	NS	25	800	60-140	20-150	<30	<50	25-175	25-175	<50	<75	95	90
8270C	2-Chloronaphthalene	NS	NS	10	330	60-140	20-150	<30	<50	60-125	50-135	<50	<75	95	90
8270C	2-Nitroaniline	NS	NS	25	800	60-140	20-150	<30	<50	50-125	40-135	<50	<75	95	90
8270C	Dimethyl phthalate	NS	NS	10	330	60-140	20-150	<30	<50	25-175	25-175	<50	<75	95	90
8270C	Acenaphthylene	NS	NS	10	330	60-140	20-150	<30	<50	47-125	37-135	<50	<75	95	90
8270C	2,6-Dinitrotoluene	NS	NS	10	330	60-140	20-150	<30	<50	51-125	41-135	<50	<75	95	90
8270C	3-Nitroaniline	NS	NS	25	800	60-140	20-150	<30	<50	51-125	41-135	<50	<75	95	90
8270C	Acenaphthene	NS	NS	10	330	60-140	20-150	<30	<50	49-124	39-135	<50	<75	95	90
8270C	2,4-Dinitrophenol	NS	NS	25	800	60-140	20-150	<30	<50	30-151	25-161	<50	<75	95	90
8270C	4-Nitrophenol	NS	NS	25	800	60-140	20-150	<30	<50	25-131	25-141	<50	<75	95	90
8270C	Dibenzofuran	NS	NS	10	330	60-140	20-150	<30	<50	52-125	42-135	<50	<75	95	90
8270C	2,4-Dinitrotoluene	NS	NS	10	330	60-140	20-150	<30	<50	39-139	29-149	<50	<75	95	90
8270C	Diethyl phthalate	NS	NS	10	330	60-140	20-150	<30	<50	37-125	27-135	<50	<75	95	90
8270C	4-Chlorophenyl-phenyl ether	NS	NS	10	330	60-140	20-150	<30	<50	51-132	41-142	<50	<75	95	90
8270C	Fluorene	NS	NS	10	330	60-140	20-150	<30	<50	48-139	38-149	<50	<75	95	90
8270C	4-Nitroaniline	NS	NS	25	800	60-140	20-150	<30	<50	40-143	30-153	<50	<75	95	90
8270C	4,6-Dinitro-2-methylphenol	NS	NS	25	800	60-140	20-150	<30	<50	26-134	25-144	<50	<75	95	90
8270C	N-Nitrosodiphenylamine	NS	NS	10	330	60-140	20-150	<30	<50	27-125	25-135	<50	<75	95	90
8270C	4-Bromophenyl-phenyl ether	NS	NS	10	330	60-140	20-150	<30	<50	53-127	43-137	<50	<75	95	90
8270C	Hexachlorobenzene	NS	NS	10	330	60-140	20-150	<30	<50	46-133	36-143	<50	<75	95	90
8270C	Pentachlorophenol	NS	NS	25	800	60-140	20-150	<30	<50	28-136	38-146	<50	<75	95	90
8270C	Phenanthrene	NS	NS	10	330	60-140	20-150	<30	<50	54-125	44-135	<50	<75	95	90
8270C	Anthracene	NS	NS	10	330	60-140	20-150	<30	<50	45-165	35-175	<50	<75	95	90
8270C	Carbazole	NS	NS	10	330	60-140	20-150	<30	<50	34-132	34-132	<50	<75	95	90
8270C	Di-n-butylphthalate	NS	NS	10	330	60-140	20-150	<30	<50	34-126	25-136	<50	<75	95	90

TABLE 2-2
Project Specific Quality Objectives

		Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
Method No	Analyte / Component	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
8270C	Fluoranthene	NS	NS	10	330	60-140	20-150	<30	<50	47-125	37-135	<50	<75	95	90
8270C	Pyrene	NS	NS	10	330	60-140	20-150	<30	<50	47-136	37-146	<50	<75	95	90
8270C	Butylbenzylphthalate	NS	NS	10	330	60-140	20-150	<30	<50	26-125	25-135	<50	<75	95	90
8270C	3,3'-Dichlorobenzidine	NS	NS	10	330	60-140	20-150	<30	<50	29-175	25-175	<50	<75	95	90
8270C	Benzo (a) anthracene	NS	NS	10	330	60-140	20-150	<30	<50	51-133	41-143	<50	<75	95	90
8270C	Chrysene	NS	NS	10	330	60-140	20-150	<30	<50	55-133	45-143	<50	<75	95	90
8270C	bis (2-Ethylhexyl) phthalate	NS	NS	10	330	60-140	20-150	<30	<50	33-129	25-139	<50	<75	95	90
8270C	Di-n-octylphthalate	NS	NS	10	330	60-140	20-150	<30	<50	38-127	28-137	<50	<75	95	90
8270C	Benzo (b) fluoranthene	NS	NS	10	330	60-140	20-150	<30	<50	37-125	27-135	<50	<75	95	90
8270C	Benzo (k) fluoranthene	NS	NS	10	330	60-140	20-150	<30	<50	37-123	37-123	<50	<75	95	90
8270C	Benzo (a) pyrene	NS	NS	10	830	60-140	20-150	<30	<50	41-125	31-135	<50	<75	95	90
8270C	Indeno (1,2,3-cd) pyrene	NS	NS	10	330	60-140	20-150	<30	<50	27-160	25-170	<50	<75	95	90
8270C	Dibenzo (a,h) anthracene	NS	NS	10	330	60-140	20-150	<30	<50	50-125	40-135	<50	<75	95	90
8270C	Benzo (g,h,i) perylene	NS	NS	10	330	60-140	20-150	<30	<50	34-149	25-159	<50	<75	95	90
8270C	Nitrobenzene-d5					35-114	23-120								
8270C	2-Fluorobiphenyl					43-116	30-115								
8270C	Terphenyl-d14					33-141	18-137								
8270C	Phenol-d5					10-110	24-113								
8270C	2-Fluorophenol					21-110	25-121								
8270C	2,4,6-Tribromophenol					10-123	19-122								
8270C	2-Chlorophenol-d4					33-110	20-130								
8270C	1,2-Dichorobenzene-d4					16-110	20-130								

TABLE 2-2
Project Specific Quality Objectives

Method No	Analyte / Component	Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
TCL PESTICIDES/AROCHLORS		ug/L	ug/kg	ug/L	ug/kg	%	%	%	%	%	%	%	%	%	%
8081A	alpha-BHC	NS	NS	0.050	1.7	60-140	20-150	<30	<50	75-125	65-135	<50	<75	95	90
8081A	beta-BHC	NS	NS	0.050	1.7	60-140	20-150	<30	<50	51-125	41-133	<50	<75	95	90
8081A	delta-BHC	NS	NS	0.050	1.7	60-140	20-150	<30	<50	75-126	65-136	<50	<75	95	90
8081A	gamma-BHC (Lindane)	NS	NS	0.050	1.7	60-140	20-150	<30	<50	73-125	63-130	<50	<75	95	90
8081A	Heptachlor	NS	NS	0.050	1.7	60-140	20-150	<30	<50	45-128	35-138	<50	<75	95	90
8081A	Aldrin	NS	NS	0.050	1.7	60-140	20-150	<30	<50	47-125	37-126	<50	<75	95	90
8081A	Heptachlor epoxide	NS	NS	0.050	1.7	60-140	20-150	<30	<50	53-134	43-144	<50	<75	95	90
8081A	Endosulfan I	NS	NS	0.050	1.7	60-140	20-150	<30	<50	49-143	39-153	<50	<75	95	90
8081A	Dieldrin	NS	NS	0.10	3.3	60-140	20-150	<30	<50	42-132	32-142	<50	<75	95	90
8081A	4,4'-DDE	NS	NS	0.10	3.3	60-140	20-150	<30	<50	45-139	35-149	<50	<75	95	90
8081A	Endrin	NS	NS	0.10	3.3	60-140	20-150	<30	<50	43-134	33-144	<50	<75	95	90
8081A	Endosulfan II	NS	NS	0.10	3.3	60-140	20-150	<30	<50	75-159	65-169	<50	<75	95	90
8081A	4,4'-DDD	NS	NS	0.10	3.3	60-140	20-150	<30	<50	48-136	38-146	<50	<75	95	90
8081A	Endosulfan sulfate	NS	NS	0.10	3.3	60-140	20-150	<30	<50	46-141	36-151	<50	<75	95	90
8081A	4,4'-DDT	NS	NS	0.10	3.3	60-140	20-150	<30	<50	34-143	25-153	<50	<75	95	90
8081A	Methoxychlor	NS	NS	0.50	17	60-140	20-150	<30	<50	73-142	63-152	<50	<75	95	90
8081A	Endrin ketone	NS	NS	0.10	3.3	60-140	20-150	<30	<50	43-134	33-144	<50	<75	95	90
8081A	Endrin aldehyde	NS	NS	0.10	3.3	60-140	20-150	<30	<50	75-150	35-160	<50	<75	95	90
8081A	alpha-Chlordane	NS	NS	0.050	1.7	60-140	20-150	<30	<50	41-125	31-135	<50	<75	95	90
8081A	gamma-Chlordane	NS	NS	0.050	1.7	60-140	20-150	<30	<50	41-125	31-133	<50	<75	95	90
8081A	Toxaphene	NS	NS	5.0	170	60-140	20-150	<30	<50	41-126	31-136	<50	<75	95	90
8081A	Decachlorobiphenyl (DCBP) (Surr)					34-133	25-143								
8081A	Tetrachloro-m-xylene (TCMX) (Surr)					45-125	35-135								
PCBs		ug/L	ug/kg	ug/L	ug/kg	%	%	%	%	%	%	%	%	%	%
8082	Arochlor-1016	NS	NS	1.0	33	60-140	20-150	<30	<50	54-125	44-127	<50	<75	95	90
8082	Arochlor-1221	NS	NS	2.0	67	60-140	20-150	<30	<50	41-126	31-136	<50	<75	95	90
8082	Arochlor-1232	NS	NS	1.0	33	60-140	20-150	<30	<50	41-126	31-136	<50	<75	95	90
8082	Arochlor-1242	NS	NS	1.0	33	60-140	20-150	<30	<50	39-150	29-160	<50	<75	95	90
8082	Arochlor-1248	NS	NS	1.0	33	60-140	20-150	<30	<50	41-126	31-136	<50	<75	95	90
8082	Arochlor-1254	NS	NS	1.0	33	60-140	20-150	<30	<50	29-131	25-141	<50	<75	95	90
8082	Arochlor-1260	NS	NS	1.0	33	60-140	20-150	<30	<50	41-126	31-136	<50	<75	95	90

TABLE 2-2
Project Specific Quality Objectives

		Project Action Limits		Minimum PQL		Accuracy Limits MS/MSD Recoveries		Precision Limits MS/MSD Deviation		Accuracy Limits LCS Recoveries		Precision Limits Field Dup Deviation		Completeness Limits	
Method No	Analyte / Component	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
TAL METALS BY ICP		mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%
6010B	Aluminum	NS	NA	0.2	22.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Antimony	NS	NA	0.06	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Arsenic	NS	NA	0.01	40.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Barium	NS	NA	0.2	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Beryllium	NS	NA	0.005	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Cadmium	NS	NA	0.005	0.50	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Calcium	NS	NA	5	100	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Chromium	NS	NA	0.01	20	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Cobalt	NS	NA	0.05	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Copper	NS	NA	0.025	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Iron	NS	NA	0.1	3.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Lead	NS	NA	0.003	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Magnesium	NS	NA	5	100	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Manganese	NS	NA	0.015	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Nickel	NS	NA	0.04	2.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Potassium	NS	NA	5	600	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Selenium	NS	NA	0.005	3.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Silver	NS	NA	0.01	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Sodium	NS	NA	5	10.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Thallium	NS	NA	0.01	6.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Vanadium	NS	NA	0.05	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
6010B	Zinc	NS	NA	0.02	1.0	50-150	30-170	<30	<50	80-120	80-120	<50	<75	95	90
MERCURY BY COLD VAPOR		mg/L	mg/kg	mg/L	mg/kg	%	%	%	%	%	%	%	%	%	%
7470	Mercury	NS	NA	0.001	NA	50-150	NA	<30	NA	70-130	NA	<50	NA	95	NA
7471	Mercury	NA	NS	NA	NA	50-150	NA	<30	NA	70-130	NA	<50	NA	95	NA

2.1.1.2 Water

Waste characterization samples will be collected to evaluate the handling, transportation, and disposal requirements of generated contact water, water generated as a result of dewatering activities, and decontamination water. Contact water, water generated from dewatering, and decontamination water will be segregated for analyses, containerized (drums or tanks), and disposed of at a facility permitted to treat and discharge the waste. Water samples will be collected in a manner specified in Section 2.0 Sampling and Analysis Plan of the Basewide Work Plan, delivered to a Navy-approved and FDEP-certified laboratory, and analyzed for the parameters listed in Table 2-1.

Navy Level C Quality Control and CCI Level A package will be required along with appropriate project specific quality objectives for the required waste characterization and incidental wastestream samples as specified in Table 2-2. All analytical data will be submitted by both hard copy and electronic file.

2.1.2 Detention Pond Influent and Effluent Samples

2.1.2.1 Sample Collection Locations

To monitor the effluent of the new detention pond, influent and effluent samples will be collected from the pond at the points of entry and exit to the pond.

Sample collection methodology is outlined in Section 2.0 Sampling and Analysis Plan provided in the Basewide Work Plan.

2.1.2.2 Sample Collection Schedule

Approximately 1 week prior to site activities, samples will be collected from each of the discharge pipes and analyzed for the parameters listed in Table 2-1 to establish baseline contaminant profiles and comparable operating parameters. Influent and effluent pond samples will be collected at the completion of the replacement activity as well, delivered to a Navy-approved and FDEP-certified laboratory, and analyzed for the parameters listed on Table 2-1. These activities and associated results will be presented in tabular form in the Close-out Report submitted to the Navy.

Navy Level C Quality Control and CCI Level B package will be required along with appropriate project specific quality objectives for the influent/effluent samples as specified on Table 2-2. All analytical data will be submitted by both hard copy and electronic file.

2.2 Data Quality Objectives for Measurement Data

Data generated from those tasks described in previous sections will be used to make the decisions on the transportation and disposal methods of any waste collected during the execution of the work. Project-specific quality objectives are listed in Table 2-2. These include the quantitation, project action, accuracy, precision, and completeness limits by which the data will be evaluated.

A Naval Facilities Engineering Service Center (NFESC)-approved laboratory will be used for all sample analyses. In addition, the laboratory will also have an FDEP-approved

CompQAP. A copy of the approved SAP addendum will be forwarded to the laboratory selected to perform chemical analysis of the samples.

The data quality objectives, as described in Section 2.0 Sampling and Analysis Plan provided in the Basewide Work Plan for each sampling activity are summarized in Table 2-3.

TABLE 2-3
Data Quality Objectives

Sampling Activity	Data Quality Objective Category
Characterization of solid waste for disposal	Definitive Data
Characterization of aqueous waste for disposal	Definitive Data
Detention pond influent and effluent	Definitive Data

Data review and evaluation will be performed by the Project QC Manager and Project Chemist on all data before they are used. Third party data validation will not be performed on the final data because it will be used for the characterization of the waste for transportation and disposal decisions only, which are typically gross contamination determinations.

3.0 Waste Management Plan

3.1 Wastestreams

The Waste Management Plan is provided as an addendum to the Basewide Work Plan for remediation and construction activities at NS Mayport under CTO No. 0036. This plan describes the waste management requirements and procedures for construction activities associated with contamination from activities at the FTC. Petroleum contaminated soil and groundwater has resulted at the facility from past activities that included firefighter training using gasoline fires. The plume of subsurface contaminated soil and groundwater has extended beneath an onsite stormwater basin and has contaminated the stormwater retained in the basin. This groundwater plume has infiltrated the basin through leaking joints and as a result, has contaminated the stormwater detained in the basin. The specific activities include:

- Demolition and removal of the existing stormwater detention pond
- Excavation of the contaminated soil beneath the concrete stormwater detention pond
- Replacement of the existing structure with a watertight concrete stormwater pond in accordance with the design specifications provided in Appendix D and the construction drawings provided in Appendix E.
- Onsite management and disposal of wastes generated from these activities

Wastes generated from these activities will be managed and disposed in accordance with FDEP and federal regulations. It is anticipated that the following wastes associated with these activities will be non-hazardous:

- Petroleum contaminated soil
- Concrete debris
- Free product
- Wastewater from the following sources: petroleum contaminated water removed from the existing stormwater basin, decontamination water, accumulated precipitation/excavation area infiltrate
- Miscellaneous contaminated and non-contaminated wastes including personal protective equipment (PPE), decontamination wastes such as plastic sheeting, and excess or spent construction materials

3.2 Waste Characterization

The SAP for these activities provides detailed information on the waste characterization requirements. All wastes (including soil and wastewater) will be fully characterized to

determine if it is hazardous, prior to transporting to an offsite treatment, recycling, or disposal facility. In some cases, offsite facilities may require additional analyses to evaluate the wastestream prior to acceptance. Non-contaminated incidental wastestreams such as PPE, office refuse, or excess construction materials will be characterized using process knowledge and will generally be classified as municipal solid waste.

Waste characterization information will be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. An approved copy of the waste profile will be received prior to offsite transportation of the material. Navy personnel will provide any required generator certification and signature.

The profile typically requires the following information:

- Generator (Navy) information including name, address, contact, and phone number
- Site name including street/mailing address
- Activity generating waste (e.g., excavation of petroleum contaminated materials)
- Source of contamination (e.g., fire fighter training activities)
- Historical chemical use for area
- Physical state of waste (e.g., solid, liquid, etc.)

3.3 Waste Management

Following excavation, petroleum-contaminated soil and debris will be accumulated and stored in stockpiles or appropriate container (e.g., roll-off containers) in a secure location. Any soil that designates as hazardous will be accumulated in roll-off containers in a secure location, or as directed by the Navy. Wastewater will be collected in portable tanks or 55-gallon drums. Any water that designates as hazardous will be stored in or transferred to tanks that meet DOT standards, and that are provided with secondary containment. The specific storage requirements are discussed below.

Waste materials from these activities (e.g., construction debris and HPDE liners) will be collected and neatly stored for disposal in such a manner as to prevent release.

Any free product will be segregated and managed separately. Free product will be sent offsite for energy recovery as a flammable material unless it has been mixed with hazardous materials/wastes.

3.3.1 Waste Storage Time Limit

It is CCI policy that hazardous wastes be removed from a site within 45 days from the date of generation. In any case, hazardous wastes will be removed within 90 days from date of generation, as required in 40 CFR 262. Other wastes will be removed from the site as soon as possible. The date of generation is the day that a waste is **first** placed in a container or a stockpile.

3.3.2 Waste Container Labels

Containers used to store/accumulate waste (including soil and groundwater) will be clearly labeled prior to storing any waste, as follows:

- "Analysis Pending" – Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date.
- "Hazardous Waste" – Pre-printed hazardous waste labels will be used. Information on label will include:
  - Accumulation start date
  - Generator Name: U.S. Navy
  - EPA ID number for site
  - Waste codes
- "Non-Hazardous Waste"–Preprinted labels will include:
  - Accumulation start date
  - Generator Name: U.S. Navy
  - EPA ID Number
  - Waste-specific information (e.g., petroleum waste)

For containers of less than 110 gallons, the manifest number must be on the label before transporting. Where applicable, the major hazards on the label (e.g., flammable, oxidizer, and carcinogen) will be included on the label.

3.3.3 General Waste Management Requirements

Wastes will be securely stored onsite prior to transportation and treatment or disposal. **Hazardous wastes will be segregated from non-hazardous wastes.** Incompatible wastes will be segregated. Incompatible wastes include wastes that would corrode or decay the container, or wastes that are unsuitable for mixing with another waste because the mixture may produce heat, pressure, fire, explosion, or toxic dusts or fumes (e.g., acids and flammables). Wastestreams from these activities will be stored in one of the following settings and according to the following requirements:

Containers (Less than 110-gallon capacity)

- Containers (e.g., 55-gallon drums) will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided to allow the unobstructed movement of personnel and equipment. A row should be no more than two containers wide.
- Each container will be provided with its own label.
- Containers will remain covered except when removing or adding waste. Covers will be properly secured at the end of each workday.
- Containers will be disposed of with the contents. If the contents are removed from the containers for offsite transportation and treatment or disposal, the containers will be decontaminated prior to re-use or before leaving the site.
- Secondary containment will be provided for containers of liquid hazardous waste or hazardous wastes that are incompatible with other wastes or materials stored nearby.

Portable Tanks

- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents will be rejected.
- Portable storage tanks for liquids will be provided with covers and will remain covered except when removing or adding waste. Covers will be properly secured at the end of each workday.
- Each tank will be provided with its own label. Old labels will be removed.
- Tanks will be decontaminated prior to re-use and/or before leaving the site.
- Secondary containment will be provided for tanks.

Roll-Off Containers

- Roll-off containers will be inspected upon arrival onsite for signs of deterioration and contamination. Any roll-off container arriving onsite with contents or contamination will be rejected.
- Roll-off containers will be provided with covers. When not in use, securely fastened covers will be installed on all roll-off containers.
- Old labels will be removed and labels will be applied for all hazardous wastes.
- Liners will be provided for roll-off containers in the following cases:
  - Hazardous soils or debris
  - Soil or debris which contains or appears to contain excessive product/sludge/water (e.g., fails paint filter test).

Stockpiles

If it is determined that the soils contain a hazardous waste (and therefore must be managed as a hazardous waste), CCI/J.A. Jones will only use stockpiles within an Area of Contamination (AOC) and with the approval of the Navy and/or the Base Closure Team. In any case, the following procedures shall be followed when stockpiling soils:

- Stockpiles will be placed on plastic sheeting near the excavation areas and within an area of existing contamination (i.e., within AOC).
  - Stockpiles will be provided with liner, cover, and perimeter berm to prevent rupture and release or infiltration of liquids.
  - Minimum 6-mil polyethylene sheeting will be used for liners and covers.
  - The perimeter berm, typically hay bales placed beneath the liner, will be constructed to allow for collection of any free liquids draining from the stockpile.
  - Accumulated free liquids will be pumped (or otherwise removed) to a container.
- Covers and perimeter berms will be secured in-place when not in use and at the end of each workday, or as necessary to prevent wind dispersion or run-off from major precipitation events.

- Construction materials for the stockpiles that contact waste will be disposed of as contaminated debris.
- A log documenting accumulation dates will be maintained for soils and other waste stored onsite in stockpiles.
- Excavation areas will be secured to prevent accidental or intentional entry by the public.

3.3.4 Storage Area Inspections

Areas used for waste/container storage will be inspected for malfunctions, deteriorations, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- Daily inspection of containers that are stored onsite (for leaks, signs of corrosion, or signs of general deterioration)
- Daily inspection of onsite tanks (for leaks, signs of corrosion, or signs of general deterioration)
- Daily inspection of stockpiles (for signs of release or deterioration of containment system)
- Daily inspection of fuel storage areas (e.g., look for eroding containment systems and rusting tanks/ancillary equipment)

3.4 Transportation

Each transportation vehicle and load of waste will be inspected before leaving the site. The quantities of waste leaving the site will be recorded. A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter will be licensed in accordance with 49 CFR 171-179. A copy of the documentation indicating that the selected transporter has appropriate licenses will be received prior to transport of any waste material.

3.4.1 Manifests/Shipping Documentation

Each load of waste material will be manifested prior to leaving the site. Non-hazardous waste manifests must be signed by NS Mayport environmental personnel. Hazardous waste will be manifested and processed through the permitted hazardous waste facility operated by the Mayport PWC. At a minimum, the manifest form will include the following information:

- Transporter information including name, address, contact and phone number
- Generator information including name, address, contact, and phone number
- Site name including street/mailing address
- Description of waste (e.g.: hazardous waste, liquid)
- Type of container
- Quantity of waste (volumetric estimate)

Additionally, each wastestream transported offsite will also have a waste profile, Land Disposal Restriction Notifications/Certifications (as applicable for hazardous wastes), and haul ticket.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, CCI/JA Jones will contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, CCI/JA Jones, in coordination with the Navy, will issue an "Exception Report" to the state of Florida, as required under 40 CFR 262.42 (as adopted under FAC 62-730).

3.4.2 Transporter Responsibilities

The transporter is responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container, dump truck, or tanker truck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets with the final manifest to CCI/JA Jones.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic
- Repair road damage caused by construction and/or hauling traffic
- Clean up material spilled in transit
- Line and cover trucks/trailers used for hauling contaminated materials to prevent releases and contamination
- Decontaminate vehicles prior to re-use, other than hauling contaminated material
- Follow safety and spill response procedures outlined in the Health and Safety Plan
- Seal trucks transporting liquids

No materials from other projects will be combined with materials from NS Mayport

3.4.3 Transportation and Disposal Log

Transportation of wastes will be inventoried the day of transportation from the site using the Transportation and Disposal Log provided in Appendix C. A carbon copy of the initial manifest form for each load will be retained onsite and a photocopy of the carbon copy will be attached to the Daily Production Report. All required transportation manifests will be prepared by CCI/J.A. Jones and signed by an NS Mayport representative.

3.5 Disposal of Wastestreams

Offsite treatment or disposal facilities will use the waste profile and supporting documentation (e.g., analytical data) to determine if they will accept a waste. Hazardous

wastes will be sent to the appropriate RCRA Subtitle C treatment, storage, or disposal facility. Non-hazardous wastes will be disposed at a Subtitle D facility or a municipal landfill, as appropriate. The treatment or disposal facility will be responsible for providing a copy of the final waste manifest and for providing a certificate of treatment or disposal for each load of waste received.

3.6 Training

Training requirements for onsite personnel, including subcontractors, is provided in the site-specific health and safety plan (Appendix B).

3.7 Records/Reporting

The following records and documents will be maintained onsite and available for inspection:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data
  - Manifests, Land Disposal Restriction notifications/certifications, bills of lading, and other shipping records
  - Offsite facility waste receipts
- Training records
- Inspection records
- Material Data Safety Sheets (MSDS) for chemicals brought onsite.

For hazardous wastes, CCI will provide support to the Navy, if requested, in preparing the Biennial Hazardous Waste Report (as required under FAC 62-730.160) for hazardous wastes shipped offsite to a treatment, storage, or disposal facility.

4.0 Environmental Protection Plan

Section 4.0 Environmental Protection Plan provided in the Basewide Work Plan addresses the general environmental protection procedures to be instituted during the performance of this CTO at NS Mayport. In addition, the following procedures provide task-specific compliance requirements associated with the site-specific activities described in the Basewide Waste Management Plan.

4.1 Regulatory Drivers

Regulatory drivers associated with this CTO are:

- FAC 62-770 – Petroleum Contamination Site Cleanup Criteria
- FAC 62-730 – Hazardous Waste Requirements
- RCRA - Resource Conservation and Recovery Act
- HSWA – Hazardous and Solid Waste Amendments

4.2 Chemical Inventory and Control

Consistent with the requirements of Section 311 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 4.8.7 of the contract, CCI will maintain an inventory of chemicals and hazardous materials brought onsite. The project manager is to request MSDSs from the client or from the contractors and the subcontractors for chemicals to which CCI employees potentially are exposed.

5.0 Site Health and Safety Plan

The site-specific health and safety plan is provided as a standalone document in Appendix B.

6.0 Quality Control Plan

Section 6.0 Quality Control Plan provided in the Basewide Work Plan details the quality administrators, the project organization for the work to be completed at NS Mayport, and the definable features of work for each project site.

The Submittal Register, provided in Appendix C of this Work Plan Addendum, documents submittals in accordance with Appendix B of CCI's Contract Management Plan (dated July 1998). Submittals will be approved by CCI/J.A. Jones or the Navy as identified in the Submittal Register. All approved submittals will be distributed by CCI/J.A. Jones to the ROICC (in duplicate), to the project site, and to the project file.

The site-specific project organization chart (Figure 6-1) depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated. The roles, responsibilities, and authorities of the individuals assigned to this CTO are summarized in Table 6-1.

Copies of the Contractor Production Report, Daily QC Report, Rework Items List, and Non-conformance Notice are included in Appendix C.

6.1 Appointing Letter of CTO QC Manager

The QC Manager for this work is Mr. Michael Halil, E.I. The appointing letter of the CTO QC Manager and Mr. Halil's resume are provided in Appendix C.

6.2 Testing Requirements

Construction testing and environmental sample analysis laboratories and their certifications; construction testing and environmental sampling and analysis; and test control are described in this section. The Testing Plan and Log is provided in Appendix C.

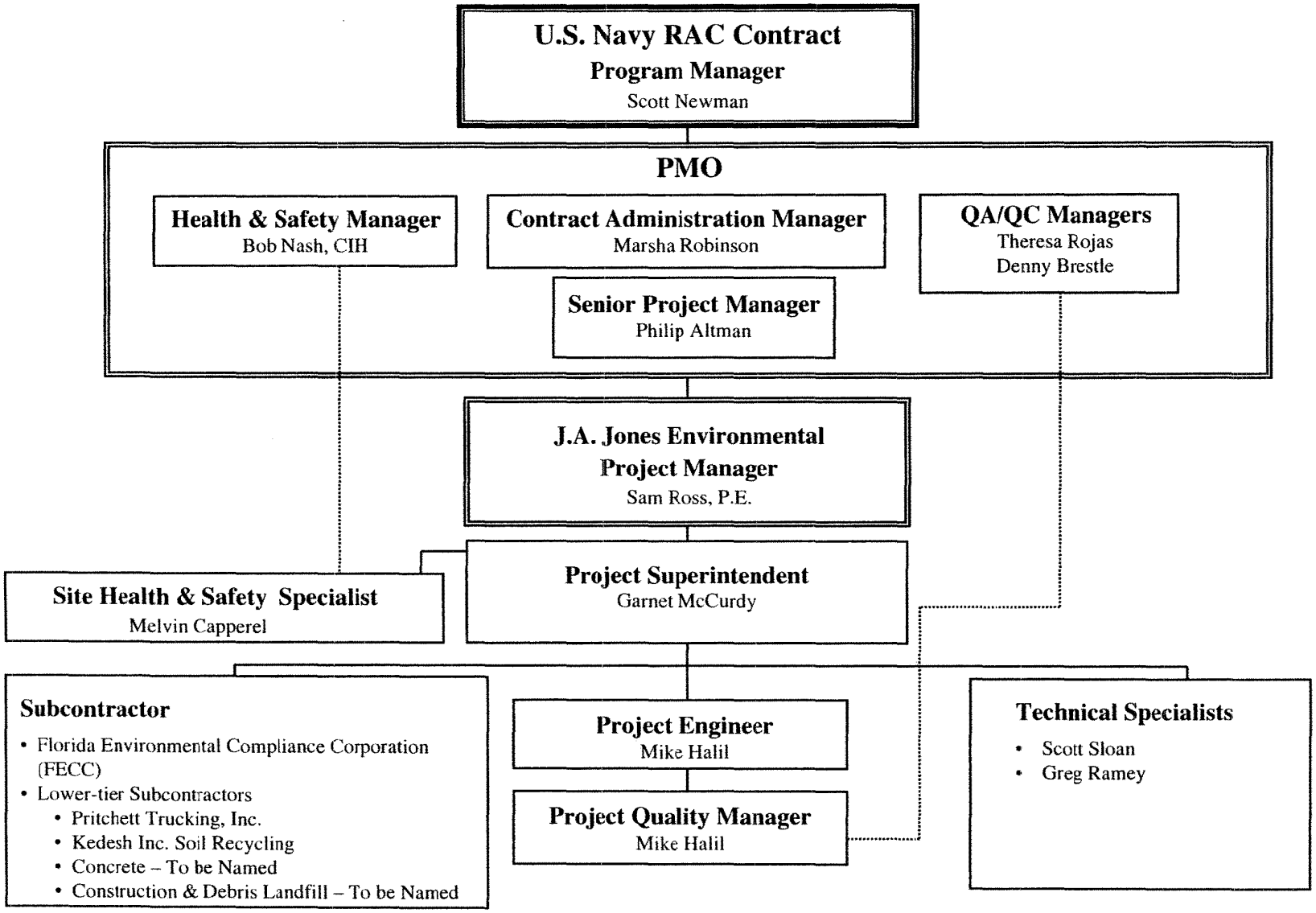
6.2.1 Identification and Certification of Testing Laboratories

The laboratories to be utilized for this CTO project have not yet been identified.

6.2.2 Construction

Construction testing (i.e., backfill compaction testing, concrete testing, etc.) will be conducted as required in Appendix D. The construction testing laboratory will function under the subcontractor and has not yet been identified. However, the testing laboratory used will be National Institute of Standards and Technology (NIST), National Voluntary Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officers (AASHTO), or the American Association for Laboratory Accreditation (AALA) accredited.

Figure 6-1
Project Organization Chart
Contract Task Order No. 0036
Fleet Training Center Detention Pond Demolition and Replacement



6.2.3 Environmental

Environmental sampling will be performed in accordance with Section 2.0 Sampling and Analysis Plan. Laboratories used for analysis of environmental samples will be Navy-approved, FDEP-certified, and have an FDEP-approved CompQAP.

6.2.4 Testing and Sampling

6.2.4.1 Construction Testing

Backfill compaction testing will be performed as described in Appendix D with a frequency of one test per 200 linear feet of trench on the final common fill lift and one test per 200 linear feet of trench on the final subgrade lift. Two fill and two concrete subgrade compaction tests will be required under the treatment system concrete pad.

Concrete testing will be conducted as described in Appendix D with a frequency of every batch or at a minimum every 10 cubic yards received.

6.2.4.2 Environmental Sampling and Analysis

Environmental sampling and analysis, including QC sampling and analysis, is specified in Section 2.0 Sampling and Analysis Plan of this Work Plan Addendum. Samples will be collected in accordance with United States Environmental Protection Agency (USEPA) Methods as outlined in the Region 4 EISOPQAM, dated May 1996, and industry standards of practice. Additionally, personnel who perform or supervise sampling will meet the requirements stated in the Navy *Installation Restoration Chemical Data Quality Manual* (September 1999) (IR CDQM).

6.2.5 Test Control

Environmental samples are specified in Section 2.0 Sampling and Analysis Plan of this Work Plan Addendum. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; and the use of qualified laboratories.

6.3 CTO Support Organizations

The supporting organizations for the work described in this Work Plan Addendum have not yet been determined.

TABLE 6-1
Roles, Responsibilities, and Authorities of Individuals Assigned to a Contract Task Order

Role	Responsibility	Authority
Project Manager	• Management and technical direction of work • Communication with Southern Division RPM and NTR • Overview subcontractor performance • Select CTO staff • Develop CTO Work Plan and supporting plans • Meet CTO performance objectives • Prepare status reports	• Approve subcontractor selection • Approve invoices to Southern Division • Approve CTO baseline schedule • Stop work at the site for any reason • Approve payment to vendors and suppliers • Approve payment to subcontractors
Site Superintendent	• Responsible for all site activities • Provide direction to subcontractors • Act for Project Manager • Provide daily status reports • Prepare CTO Work Plan • Conduct daily safety meetings • Review subcontractor qualifications • Stop work for unsafe conditions or practices	• Stop work for subcontractors • Approve corrective action for site work-arounds • Approve materials and labor costs for site operations • Resolve subcontractor interface issues • Approve daily and weekly status reports
Resident Engineer	• Monitor and oversee subcontractor compliance with scope of work • Review requests for changes in scope of work • Review technical qualifications of subcontractors • Prepare Field Change Requests • Respond to Design Change Notices • Recommend improvements in work techniques or metrics • Recommend work-around to Site Superintendent	• Approve Field Change Requests below ceiling amount • Complete daily compliance report
Field Accountant	• Provide project scheduling coordination • Responsible for site cost tracking and reporting • Maintain record of site purchases • Maintain government property records	• Approve payables for disposable items
Transportation and Disposal Coordinator	• Develop site specific procedures for transport and disposal practices • Plan and coordinate the transport and disposal of waste • Review subcontractor qualifications • Audit T&D subcontractors compliance with contract requirements	• Approve subcontractors daily report of waste material removed from the site • Approve corrective action plans from T&D subcontractor
Project Assistant	• Maintain CTO files and correspondence • Coordinate CTO schedule and monitor deliverables • Maintain change management records • Maintain Action Tracking System log	• Submit Action Tracking System log • Assign correspondence log numbers
Project QC Manager	• Monitor and report on subcontractor quality and quantities • Audit subcontractors offsite fabrication • Maintain Submittal Register • Participate in Continuous Improvement Team • Stop work for non-compliant operations • Maintain Lessons Learned Log	• Stop work for non-compliant operations • File daily quantities report • File Lessons Learned Log Sheet • Approve resumption of work for resolved quality issues

TABLE 6-1
Roles, Responsibilities, and Authorities of Individuals Assigned to a Contract Task Order

Role	Responsibility	Authority
Site Health and Safety Specialist	• Monitor and report on subcontractor safety and health performance • Record and report safety statistics • Conduct needed site safety and health orientation • Maintain Environmental Log • Stop work for unsafe practices or conditions	• Stop work for unsafe practices or conditions • Approve subcontractor site specific health and safety plan • Set weekly safety objectives • Approve resumption of work for resolved safety issues
Subcontract Specialist	• Prepare bid packages • Purchase disposable materials • Maintain subcontract log	

7.0 Technical Specifications

The following technical specifications are applicable to complete the work described in this Work Plan Addendum:

- 01010 General Paragraphs
- 01430 Waste Sampling Requirements
- 02220 General Excavation, Filling, and Backfilling
- 02223 Transportation and Disposal of Contaminated Material
- 02571 Pavement Removal and Replacement
- 03301 Concrete

The specifications are provided in Appendix D.

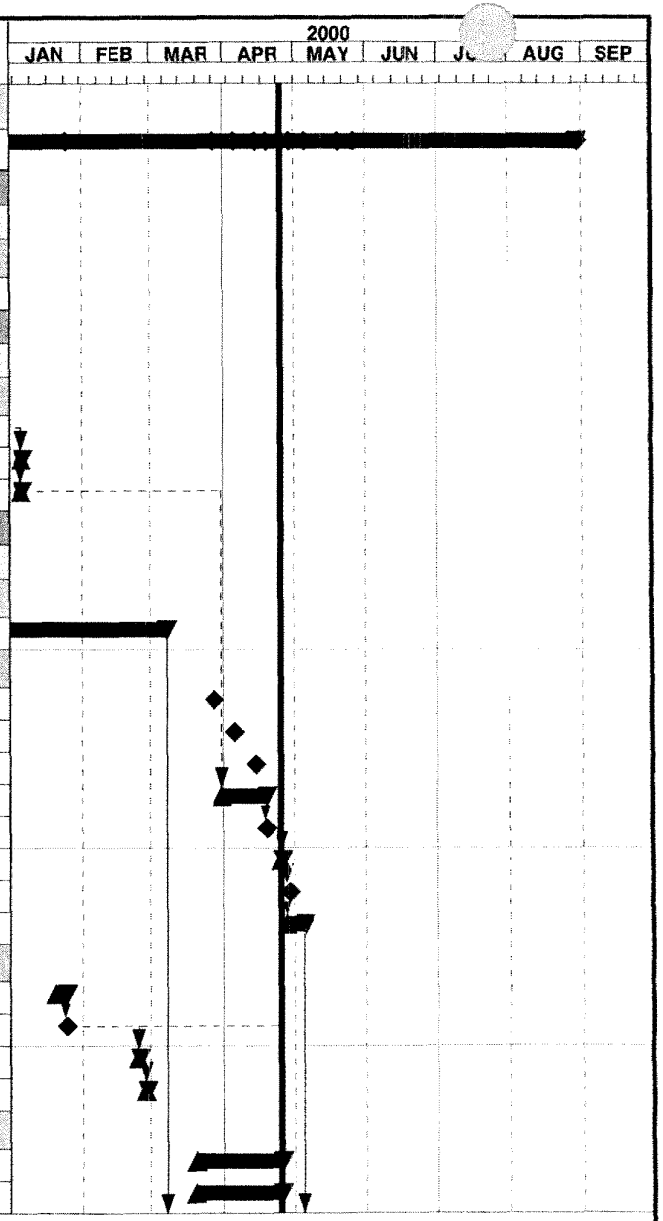
Appendix A

CPM Project Schedule

CTO #0036 - 157338 - STORMWATER BASIN, MAYPORT

Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Dur	Early Start	Early Finish
Subtotal		60		192	90	01DEC99A	30AUG00
.....							

FUNDING AUTHORIZATION							
A9 100000	10.01	100	Project Authorization	0	0	01DEC99A	
PHASE 1							
PHASE 1A							
PHASE 1A							
A910010290	10.01.02.90	100	CTO Setup	1	0	02DEC99A	02DEC99A
A910010291	10.01.02.91	100	Site Visit Preparation	1	0	06JAN00A	06JAN00A
A910010292	10.01.02.92	100	Perform Site Visit	3	0	06JAN00A	06JAN00A
PHASE 2							
PHASE 2							
PROJECT MANAGEMENT							
A920010399	20.01.03.99	100	Project Management	67*	0*	02DEC99A	07MAR00A
BID PACKAGE PREP/AWARD							
A920144		100	Issue RFB to Subcontractors (Original Scope)	0	0		27MAR00A
A920145		100	Subcontractor Pre-Bid Site Visit (Orig Scope)	0	0		05APR00A
A920146		100	Subcontractor Bids Due (Orig Scope)	0	0		14APR00A
A920010391	20.01.03.91	100	Prepare Bid Packages (Revised Scope)	5	0	31MAR00A	19APR00A
A9 201500		100	Issue RFB to Subcontractors (Revised Scope)	0	0		19APR00A
A920010392	20.01.03.92	100	Subcontractor Pre-Bid Site Visit (Revised Scope)	1	0	25APR00A	25APR00A
A9 201650		0	Subcontractor Bids Due (Revised Scope)	0	0		28APR00*
A920010393	20.01.03.93	0	Evaluate Bid Packages (Revised Scope)	6	6	28APR00	05MAY00
COST PROPOSAL PREPARATION							
A920010326	20.01.03.26	100	Develop Cost Estimate/Schedule	25	0	20JAN00A	24JAN00A
A920010327		100	Submit Cost Proposal to Client	0	0		24JAN00A
A9 20187		100	Negoiate CTO with Client	1	0	25FEB00A	25FEB00A
A9 20199		100	Submit Final/Negoiated Estimate/Schedule	1	0	28FEB00A	28FEB00A
WORK PLANS PREPARATION							
A920010301	20.01.03.01	100	Sampling and Analysis Plan	20*	0*	20MAR00A	25APR00A
A920010304	20.01.03.04	100	Environmental Protection Plan	20*	0*	20MAR00A	25APR00A



Start Date 22AUG98
Finish Date 30AUG00
Data Date 25APR00
Run Date 25APR00 14:47

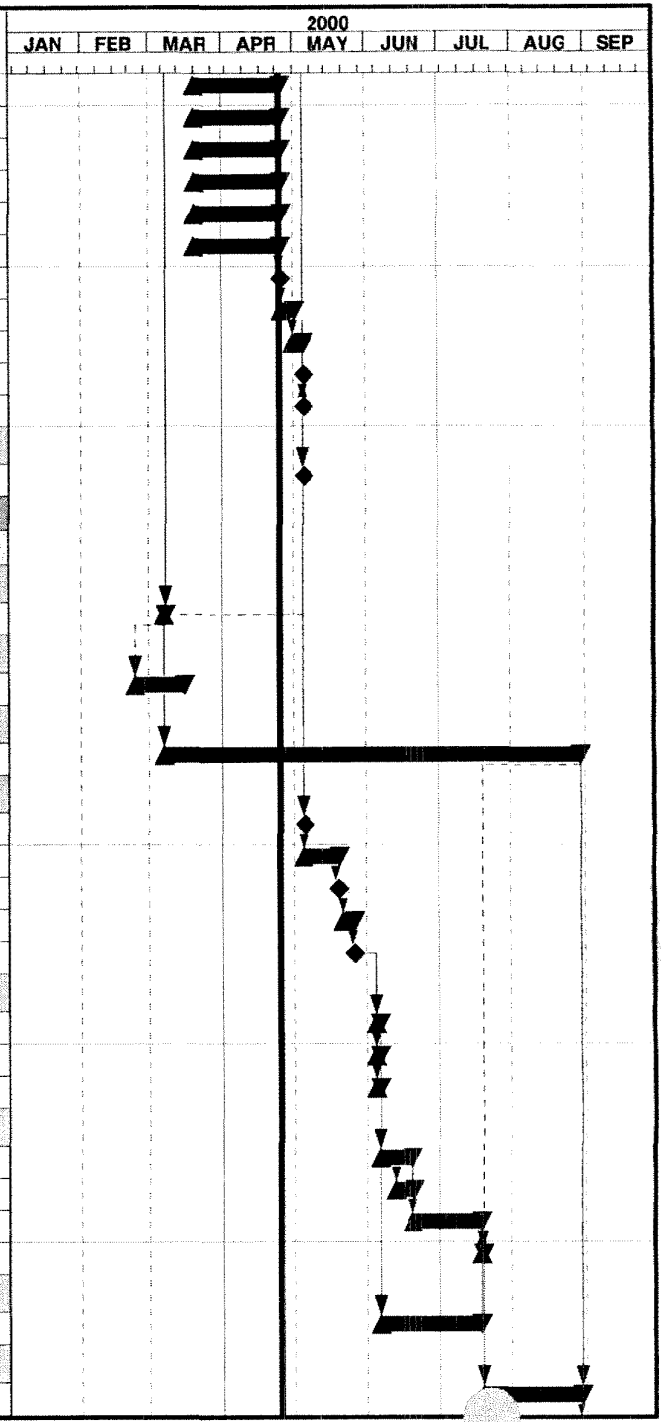
Early Bar
Progress Bar
Critical Activity

NFAC - C036

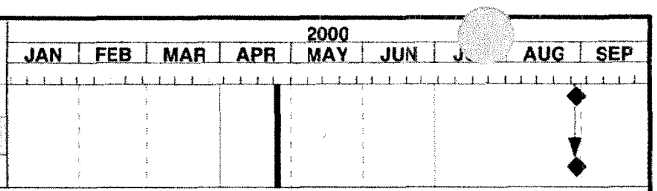
NAVAL STATION, MAYPORT, FL
CTO COMPLETION SCHEDULE
NAVY RAC SOUTHERN DIVISION

CH2MHILL
Constructors, Inc.

Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish
A920010306	20.01.03.06	100	Pollution Control Plan	20*	0*	20MAR00A	25APR00A
A920010308	20.01.03.08	100	Site - Specific H&S Plan H&S PLAN	20*	0*	20MAR00A	25APR00A
A920010313	20.01.03.13	100	General Site Work Plan	20*	0*	20MAR00A	25APR00A
A920010314	20.01.03.14	100	Quality Control Plan	20*	0*	20MAR00A	25APR00A
A920010315	20.01.03.15	100	Transportation & Disposal Plan	20*	0*	20MAR00A	25APR00A
A920010390	20.01.03.90	100	Hazardous Waste Mgmt Plan	20*	0*	20MAR00A	25APR00A
A9 20290		100	Submit Draft Work Plans	0	0		25APR00A
A9 20185		0	Southern Division WP Comment Period	4	4	26APR00*	01MAY00
A9 20190		0	Incorporate WP Comments	5	5	01MAY00	05MAY00
A9 2095		0	Work Plan Approval Received	0	0		05MAY00
A9 20191		0	Submit Final WP to Southern Division	0	0		05MAY00
PHASE COMPLETE							
A9 20250		0	Phase II Complete	0	0		05MAY00
PHASE 3							
STORMWATER BASIN CONSTRUCTION/INSTALLATION							
FUNDING AUTHORIZATION							
A9 2000001		100	Phase 3 Award	1	0	07MAR00A	07MAR00A
DRAWINGS/SPECIFICATION REVIEW							
A920010330	20.01.03.30	100	Prepare Construction Drawings/Specs	26*	0*	24FEB00A	15MAR00A
PROJECT MANAGEMENT							
A999220101	99.22.01.01	0	Project Management	125*	90*	07MAR00A	30AUG00
BID PACKAGE PREP/AWARD							
A9 201880		0	Issue Letter of Intent to Award	0	0		05MAY00
A9 201810	32.01.03.94	0	Submit Subcontractor Plans & Submittals	11	11	05MAY00	19MAY00
A9 201800		0	Subcontractor Plans Due	0	0		19MAY00
A9 201890		0	Review Subcontractor Plans & Submittals	5	5	22MAY00	26MAY00
A9 20210		0	Award Subcontracts	0	0		26MAY00
MOBILIZATION & PREPARATORY WORK							
A932010292	32.01.02.92	0	Subcontractor Mobilization	1	1	05JUN00	05JUN00
A932221209	32.22.12.09	0	Subcontractor P&P Bonds	1	1	05JUN00	05JUN00
A999010290	99.01.02.90	0	CTO Pre-Construction Meeting	1	1	05JUN00	05JUN00
BASIN CONSTRUCTION							
A932030101	32.03.01.01	0	Demo of Existing Basin	10	10	06JUN00	19JUN00
A932133202	32.13.32.02	0	Excavation/Backfill & T&D	6	6	13JUN00	20JUN00
A932030301	32.03.03.01	0	Basin Installation	20	20	20JUN00	18JUL00
A932210591	32.21.05.91	0	Subcontractor Demobilization	1	1	19JUL00	19JUL00
TRANSPORTATION AND DISPOSAL							
A932190207	32.19.02.07	0	T&D, Non-Haz Drums (Dewatering)	30*	30*	06JUN00	18JUL00
POST CONSTRUCTION							
A931210605	32.21.06.05	0	Prepare Construction Documentation Report	30	[illegible]0	20JUL00	30AUG00



Activit ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Dur	Early Start	Early Finish
A9312106		0	Submit Construction Documentation Report	0	0		30AUG00
CTO COMPLETE							
A9 3200009		0	Project Complete	0	0		30AUG00



Appendix B

Health and Safety Plan

Health and Safety Plan
Fleet Training Center
Detention Pond Demolition and Replacement

Naval Station Mayport
Mayport, Florida

Revision No. 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0036

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

April 2000

Contents

Attachments

Figures

Tables

Tables Continued

Acronyms

°F	degrees Fahrenheit
ATL	Atlanta
ASW	anit-submarine warfare
CCI	CH2M HILL Constructors, Inc.
CNS	central nervous system
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
dBA	decibel A-rated
DOT	Department of Transportation
FA	first aid
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation derived waste
lb	pound
LEL	lower explosive limit
mg/m^3	milligrams per cubic meter
MSDS	Material Safety Data Sheet
NDG	nuclear density gauge
NS	Naval Station
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PDF	personal flotation device
PPE	personal protective equipment
ppm	parts per million
RMSF	Rocky Mountain Spotted Fever
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	Standard of Practice
STEL	short term exposure limit
SZ	support zone
TBD	to be determined
TMCC	truck-mounted crash cushion
TSDF	treatment, storage, and disposal facility

This health and safety plan (HSP) will be kept on the site during field activities and will be reviewed and updated as necessary. The plan adopts, by reference, the standard operating procedures (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual*, and CH2M HILL Constructors, Inc. (CCI) Health and Safety Guidelines as appropriate. The Site Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the content of this plan. Site personnel must sign Attachment 1. In addition, this plan adopts procedures in the work plan for the project.

1.0 Project Information and Description

Client or Owner: Southern Division, Navy RAC

Project No: 156087

CCI Project Manager: Sam Ross/J.A. Jones

Office: Jacksonville, Florida

Site Name: Stormwater Basin

Site Address: Naval Station (NS) Mayport, Mayport, Florida

Date Health and Safety Plan Prepared: April 2000

Date(s) of Initial Visit: March 2000

Date(s) of Site Work: May – December 2000

Site Access: Access is through the Main Gate off SR-A1A. The visitor pass phone is 270-5585.

Site Size: The site occupies about 5 square miles just east of Jacksonville, Florida.

Site Topography: The site is relatively flat in a coastal area.

Prevailing Weather: hot, humid summers with the possibility of hurricanes in season

Site Description and History: NS Mayport serves as a main fleet base and has airfield capabilities. The Fleet Training Center is located approximately 1400 feet north of the base wastewater treatment plant within Operating Unit (OU) 2 near the northern perimeter of NS Mayport. Petroleum contaminated soil and groundwater has resulted at the facility from past activities that included firefighter training using gasoline fires. The plume of subsurface contamination has extended beneath an onsite stormwater basin and has contaminated the stormwater retained in the basin. This groundwater plume has infiltrated the basin.

2.0 Project Organization and Tasks to be Performed under this Plan

2.1 Project Organization

Client: Southern Division, Naval Facilities Engineering Command

CCI/J.A. Jones:
Project Manager: Sam Ross/J.A. Jones
Refer to Section 4.0 for field staff.

Contractors and Subcontractors: Refer to Section 4.2.

2.2 Description of Tasks

Refer to project documents (i.e., work plan) for detailed task information. A health and safety risk analysis has been performed for each task and is incorporated in this HSP through task-specific hazard controls and requirements for monitoring and protection. Tasks in addition to those listed below require an approved amendment to this plan before additional work begins. Refer to Section 10.2 for procedures related to tasks that do not involve hazardous waste operations and emergency response (HAZWOPER).

2.2.1 HAZWOPER-Regulated Tasks

HAZWOPER-regulated tasks include:

- Demolition of existing stormwater retention basin
- Excavation of 250 tons of petroleum contaminated soil
- Backfill excavation

2.2.2 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state HAZWOPER regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-HAZWOPER-trained personnel. **Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites.**

TASKS	CONTROLS
• Masonry work	• Brief on hazards, limits of access, and emergency procedures
• Iron work (installing rebar)	• Post contamination areas as appropriate (refer to Section 8.2 for details)
• General heavy equipment (excavation, grading, etc.)	

A task hazard analysis is provided in Table 2-1.

TABLE 2-1
Task Hazard Analysis Basin Demolition and Re-Construction

Potential Hazards	Tasks					
	Excavation HS-32	Hand Auger	Survey	Demolition HS-45	Observation of loading material for offsite disposal	Remedial Construction
Buried Utilities, Drums, Tanks	X	X		X		
Compressed Gas HS-63				X		X
Concrete and Masonry Work						X
Cranes, Hoist, Rigging	X			X		X
Earthmoving HS-27	X					
Electrical HS-23	X					
Energized Electrical	X			X		X
Excavation HS-32	X					
Fire Protection	X			X		X
Flying debris/objects	X	X			X	X
Heavy Equipment	X				X	X
Ladders HS-25	X					X
Lockout/ Tagout HS-33	X					X
Manual Lifting HS-29	X	X		X		X
Noise >85dBa	X			X	X	X
Rigging	X					X
Slip, Trip, Fall	X	X	X		X	X
Trenches/ excavations HS-32	X					X
Visible lighting	X	X	X		X	
Vehicle traffic					X	X
Welding and Cutting HS-63		X				X
Working near water	X	X				X

2.2.3 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CCI employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CCI employees and subcontractors who do not understand any of these provisions should contact the SHSS for clarification.

In addition to controls specified in this section, activity Self-Assessment Checklist is provided in Attachment 5. This checklist is to be used to assess the adequacy of CCI and subcontractors site-specific safety requirements. Objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing gaps. A Self-Assessment Checklist will be completed weekly and returned to the Senior Project Manager, with a copy to the Health and Safety Manager (HSM).

2.2.3.1 General Hazards and Housekeeping

Reference CH2M HILL SOP HS-20, General Practices

The following guidelines relate to general practices:

- Site work will be performed during daylight hours whenever possible. Work conducted during hours of darkness will require enough illumination intensity to read a newspaper without difficulty.
- Hearing protection worn in areas where you need to shout to hear someone within 3'.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel established and kept free from accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and /or other devices to be used.
- Stairs or ladders are required when there is a break in elevation of 19 inches or more.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

2.2.3.2 Hazard Communication

Reference CH2M HILL SOP HS-05, Hazard Communication

The SSHS is to perform the following:

- Complete an inventory of chemicals brought on site by CCI using the Project-Specific Chemical Hazard Communication Form provided in Attachment 2.
- Confirm inventory of chemicals brought on site by CCI subcontractors is available.
- Confirm locations of Material Safety Data Sheets (MSDSs) from client, contractors, and subcontractors for chemicals to which CCI employees potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using the Chemical-Specific Tracking Form provided in Attachment 3.

2.2.3.3 Benzene

The following guidelines relate to benzene:

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met.
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Skin absorption is a potential route of benzene exposure.
- Benzene is considered a "Confirmed Human Carcinogen."
- A short term exposure limit (STEL: 15 minutes) exists for this material.
- Benzene has an aromatic odor.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person.

2.2.3.4 Compressed Gas Cylinders

Reference CH2M HILL SOP HS-63, Welding and Cutting

The following guidelines relate to welding and cutting:

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.

- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

2.2.3.5 Concrete and Masonry Construction

The following guidelines relate to concrete and masonry construction:

- Wear appropriate personal protective equipment (eye/face protection, gloves, rubber boots) when in areas where concrete is being poured.
- Protruding reinforcing steel (rebar), onto which personnel could fall, must be guarded to eliminate the hazard of impalement.
- Stay as clear as possible of all hoisting operations. Loads, including concrete buckets, shall not be hoisted overhead of personnel.
- Maintain a safe distance from formwork and shoring being removed from concrete structures.
- Maintain a safe distance from precast and lift-slab concrete being lifted into position until physically secured.
- Do not stand behind the tensioning jacks during post-tensioning.
- Do not ride concrete buckets.
- Do not enter limited access zones during concrete or masonry wall construction.

2.2.3.6 Cranes, Hoists, and Rigging

The following guidelines relate to cranes, hoists, and rigging:

- Only certified crane operators are permitted to operate cranes.
- Maintain safe distance from operating cranes and stay alert of crane movement. Avoid positioning between fixed objects and operating cranes and crane pinch points, remain outside of crane swing and turning radius. Never turn your back on operating cranes.
- Approach cranes only after receiving the operator's attention. The operator shall acknowledge your presence and stop movement of the crane. Never approach operating cranes from the side or rear where the operator's vision is compromised.
- When required to work in proximity to operating cranes, wear high-visibility vests to increase visibility to operators. For work performed after daylight hours, vests shall be made of reflective material or include a reflective stripe or panel.
- Stay clear of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Cranes shall not be used to lift or lower personnel.

- If crane becomes electrically energized, personnel shall be instructed not to touch any part of the crane or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the crane.
- Do not exceed hoist load limits.
- Ensure load is level and stable before hoisting
- Inspect all rigging equipment prior to use. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.

2.2.3.7 Demolition

Reference CH2M HILL SOP HS-45, Demolition

The following guidelines relate to demolition:

- Remain a safe distance from the demolition zone to reduce exposure to fragmentation of glass, steel, masonry, and other debris during demolition operations.
- Do not enter the demolition zone unless completely necessary, and only after the competent person has assessed the condition of the structure and has authorized entry.
- Follow requirements established by competent person. Competent person shall inform personnel of areas that are safe to enter and areas where entry is prohibited. Competent person should escort visitors while in the demolition zone.
- All demolition activities that may affect the integrity of the structure or safety of personnel must cease until personnel have exited the demolition zone.

2.2.3.8 Earthmoving Equipment

Reference CH2M HILL SOP HS-27, Earthmoving Equipment

The following guidelines relate to earthmoving equipment:

- Only authorized personnel are permitted to operate earthmoving equipment.
- Maintain safe distance from operating equipment and stay alert of equipment movement. Avoid positioning between fixed objects and operating equipment and equipment pinch points, remain outside of equipment swing/turning radius. Pay attention to backup alarms, but not rely on them for protection. Never turn your back on operating equipment.
- Approach operating equipment only after receiving the operator's attention. The operator shall acknowledge your presence and stop movement of the equipment. Caution shall be used when standing next to idle equipment; when equipment is placed in gear it can lurch forward or backward. Never approach operating equipment from the side or rear where the operator's vision is compromised.

- When required to work in proximity to operating equipment, wear high-visibility vests to increase visibility to equipment operators. For work performed after daylight hours, vests shall be made of reflective material or include a reflective stripe or panel.
- Do not ride on earthmoving equipment unless it is specifically designed to accommodate passengers. Only ride in seats that are provided for transportation and that are equipped with seat belts.
- Earthmoving equipment shall not be used to lift or lower personnel.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the equipment.

2.2.3.9 Electrical

Reference CH2M HILL SOP HS-23, Electrical

The following guidelines relate to electrical systems:

- Only qualified personnel are permitted to work on energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
  - equipped with third-wire grounding.
  - covered, elevated, or protected from damage when passing through work areas.
  - protected from pinching if routed through doorways.
  - not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools/equipment must be effectively grounded/double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.

- Protect electrical equipment, tools, switches, and outlets from environmental elements.

2.2.3.10 Energized Electrical

The following guidelines relate to energized electrical systems:

- Only qualified personnel permitted to work on unprotected energized electrical systems.
- Electrical wiring and equipment shall be de-energized prior to conducting work unless it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations.
- Electrical systems shall be considered energized until lockout/tagout procedures are implemented.
- The Energized Electrical Work permit provided in Attachment 4 of this plan must be completed prior to working on unprotected energized electrical systems.
- Follow control measures &procedures identified on Energized Electrical Work permit.

2.2.3.11 Excavation

Reference CH2M HILL SOP HS-32, Excavations

The following guidelines relate to excavations:

- Do not enter the excavations unless completely necessary, and only after the competent person has completed the daily inspection and has authorized entry.
- Follow all excavation entry requirements established by the competent person.
- Do not enter excavations where protective systems are damaged or unstable.
- Do not enter excavations where objects or structures above the work location may become unstable and fall into the excavation.
- Do not enter excavations with the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels.
- Do not enter excavations with accumulated water unless precautions have been taken to prevent excavation cave-in.

2.2.3.12 Fire Prevention

Reference CH2M HILL SOP HS-22, Fire Prevention

The following guidelines relate to fire prevention:

- Fire extinguishers shall be provided so travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - be maintained in a fully charged and operable condition,
  - be visually inspected each month, and
  - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.

- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

2.2.3.13 Ladders

Reference CH2M HILL SOP HS-25, Stairways and Ladders

The following guidelines relate to ladders:

- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Portable ladders must extend at least 3 feet above landing surface.
- User must face the ladder when climbing; keep belt buckle between side rails.
- User must use both hands to climb, use rope to raise and lower equipment and materials.
- Straight and extension ladders must be tied off to prevent displacement.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Fixed ladders $\geq$ 20 feet in height must be provided with fall protection devices.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder, nor are users to sit on top or straddle a stepladder.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-forth of the working length of the ladder.
- Prior to eating, drinking, smoking; separation of work and street clothing/footwear; etc.).

2.2.3.14 Lockout/Tagout

Reference CH2M HILL SOP HS-33, Lockout/Tagout

The following guidelines relate to lockout/tagout procedures:

- Do not work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented.
- Staff working under a lockout/tagout procedure must complete the CH2M HILL Lockout/Tagout training course. Project-specific training may also be required on site-specific lockout/tagout procedures.

- Standard lockout/tagout procedures include the following six steps:
  - notify all personnel in the affected area of the lockout/tagout,
  - shut down the equipment using normal operating controls,
  - isolate all energy sources,
  - apply individual lock and tag to each energy isolating device,
  - relieve or restrain all potentially hazardous stored or residual energy, and
  - verify that isolation and de-energization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- All safe guards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal.
- Do not remove another person's lock or tag.

2.2.3.15 Manual Lifting

Reference CH2M HILL SOP HS-29, Manual Lifting

The following guidelines relate to manual lifting:

Proper lifting techniques must be used when lifting any object.

- Plan storage and staging to minimize lifting or carrying distances.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

2.2.3.16 Rigging

The following guidelines relate to rigging:

- Stay clear of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Hoists shall not be used to lift or lower personnel.
- Do not exceed hoist load limits.
- Ensure load is level and stable before hoisting
- Inspect all rigging equipment prior to use. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.

2.2.3.17 Steel Erection

The following guidelines relate to steel erection:

- Protruding reinforcing steel (rebar), onto which personnel could fall, must be guarded to eliminate the hazard of impalement.
- Structural steel loads shall not be released from hoisting line until members are secured with at least two bolts, or the equivalent at each connection and drawn up wrench tight.
- Tag lines shall be used for controlling loads.

- Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.
- Air line hose sections shall be secured together, except when quick disconnect couplers are used to join sections.
- Impact wrenches used for bolting provided with a locking device for retaining socket.
- Plumbing-up guys shall be removed only under the supervision of a competent person.
- Provisions shall be made to secure temporary flooring against displacement. Planks shall overlap the bearing on each end by a minimum of 12 inches. Wire mesh, exterior plywood, or equivalent, shall be used around columns where planks do not fit tightly.

2.2.3.18 Exposure to Public Vehicular Traffic

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a "buddy system" should be used, where one worker is looking towards traffic.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.

- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

2.2.3.19 Welding and Cutting

Reference CH2M HILL SOP HS-63, Welding and Cutting

The following guidelines relate to welding and cutting:

- Only authorized/trained personnel are permitted to operate welding/cutting equipment.
- Do not enter areas where welding/cutting operations are taking place unless completely necessary and only after receiving permission from the welding/cutting operator.
- If you must be present in an area during welding/cutting operations, position yourself behind flash screens or wear glasses/goggles with lenses of appropriate darkness.
- Do not look directly at the welding/cutting flash or at reflective surfaces surrounding welding/cutting operations.
- Avoid contacting compressed gas cylinders. Cylinders should be firmly secured in an upright position at all times.
- Be aware of tripping hazards created by welding hoses, power cables, leads, and cords positioned on walking surfaces.

2.2.3.20 Working Near Water

The following guidelines relate to water safety:

- U.S. Coast Guard-approved personal flotation devices (PDFs), or life jackets, provided for each employee will be worn.
- PFDs will be inspected before and after each use. Defective equipment will not be used.
- Sampling and other equipment will be used according to manufacturers' instructions.
- A minimum of one life-saving skiff will be provided for emergency use.
- A minimum of one ring buoy with 90 feet of 3/8-inch solid-braided polypropylene (or equal) rope will be provided for emergency use.

3.0 Hazard Evaluation and Control

3.1 Heat Stress

Reference CH2M HILL SOP HS-09, Heat and Cold Stress

3.1.1 Preventing Heat Stress

The following guidelines relate to heat stress prevention:

- Drink 16 ounces of water before beginning work, such as in the morning or after lunch. Disposable (e.g., 4-ounce) cups and water maintained at 50° to 60 degrees Fahrenheit (°F) should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Take regular breaks in a cool, preferably air-conditioned, area. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours. Monitor for signs of heat stress.
- Acclimate to site work conditions by slowly increasing workloads; e.g., do not begin site work with extremely demanding activities.
- Use cooling devices, such as cooling vests, to aid natural body ventilation. The devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- During hot weather, conduct field activities in the early morning or evening if possible.
- Provide adequate shelter to protect personnel against radiant heat (sun, flames, hot metal), which can decrease physical efficiency and increase the probability of heat stress.
- In hot weather, rotate shifts of workers.
- Maintain good hygiene standards by frequently changing clothing and by showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should consult medical personnel.

3.1.2 Symptoms and Treatment of Heat Stress

The symptoms of heat stress are listed in Table 3-1.

TABLE 3-1
Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash (*miliaria rubra*, "prickly heat")	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!

3.1.3 Heat-Stress Monitoring

For field activities part of ongoing site work activities in hot weather, the following procedures should be used to monitor the body's physiological response to heat and to estimate the work-cycle/rest-cycle when workers are performing moderate levels of work. These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (greater than 50 percent), or when the workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute, or 20 beats per minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 110 beats per minute, or 20 beats per minute above resting pulse.

3.2 Locating Buried Utilities

3.2.1 Local Utility Mark-Out Service

The Base Civil Engineer will be responsible for utility mark-out.

3.2.2 Procedures for Locating Buried Utilities

Procedures for locating buried utilities are listed as follows:

- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural-gas lines, and fuel tanks and lines.
- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary, clear locations with a utility-locating instrument (e.g., metal detector).
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually. Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SHSS should confirm that arrangement.

3.3 Biological Hazards and Controls

TABLE 3-2
Biological Hazards and Controls

Hazard and Location	Control Measures
Snakes typically are found in underbrush and tall grassy areas.	If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Carry the victim or have him/her walk slowly if the victim must be moved. Try to identify the type of snake: note color, size, patterns, and markings.
Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas.	Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.
Exposure to **bloodborne pathogens** may occur when rendering first aid or CPR, or when coming into contact with medical or other potentially infectious material, or when coming into contact with landfill waste or waste streams containing such infectious material.	Training is required before a task involving potential exposure is performed. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.
Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic.	Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSS and/or the buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.
Other potential biological hazards	None Anticipated.

3.4 Tick Bites

Reference CH2M HILL HS-03, Tick Bites

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size.

Prevention against tick bites includes avoiding tick areas; wearing tightly woven light-colored clothing with long sleeves and wearing pant legs tucked into boots or socks; spraying **only outside** of clothing with insect repellent containing permethrin or permanone, and spraying skin with DEET; and checking yourself frequently for ticks and showering as soon as possible. To prevent chemical repellents from interfering with sample analyses, exercise care while using repellents during the collection and handling of environmental samples.

If bitten by a tick, carefully remove the tick with tweezers, grasping the tick as close as possible to the point of attachment while being careful not to crush the tick. After removing the tick, wash your hands and disinfect and press the bite area. The removed tick should be saved. Report the bite to human resources personnel.

Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF): Lyme - a rash that looks like a bullseye with a small welt in the center; RMSF - a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, bone pain may develop. If symptoms appear, seek medical attention.

3.5 Radiological Hazards and Controls

Refer to CH2M HILL's Corporate Health and Safety Program, Program and Training Manual, and Corporate Health and Safety Program, Radiation Protection Program Manual, for standards of practice for operating in contaminated areas. There are no known radiological hazards associated with this project.

3.6 Hazards Posed by Chemicals Brought on the Site

3.6.1 Hazard Communication

Reference CH2M HILL Hazard Communication Manual

CH2M HILL's *Hazard Communication Program Manual,* which is available from area or regional offices and from the Corporate Human Resources Department in Denver, Colorado. The project manager is to request Material Safety Data Sheets (MSDSs) from the client or from the contractors and the subcontractors for chemicals to which CCI employees potentially are exposed. The SHSS is to do the following:

- Give employees required site-specific hazard communication (HAZCOM) training.
- Confirm that inventory of chemicals brought on the site by subcontractors is available.
- Before or as chemicals arrive on the site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with identity of chemical and with hazard warnings, if any.

The chemical products listed in Table 3-3 will be used on the site. Refer to Attachment 2 for MSDSs.

TABLE 3-3
Chemical Hazards

Chemical	Quantity	Location
Methane (calibration gas)	1 liter, compressed gas	Support Zone
Pentane (calibration gas)	1 liter, compressed gas	Support Zone
Methanol (decontamination)	4 liters, flammable	Support/Decontamination Zone
Hexane (decontamination)	4 liters, flammable	Support/Decontamination Zone
Alconox/Liquinox (detergent)	< 1 liter, powder/liquid	Support/Decontamination Zone

3.6.2 Shipping and Transportation of Chemical Products

Reference CH2M HILL's Procedures for Shipping and Transporting Dangerous Goods

Nearly all chemicals brought to the site are considered hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive the CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

3.7 Contaminants of Concern

Reference Project Files for More-Detailed Contaminant Information

Contaminants of concern are listed in Table 3-4.

3.8 Potential Routes of Exposure

Potential routes of exposure include:

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.
- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 5 and 6, respectively.
- **Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before eating, drinking, or smoking).

TABLE 3-4
Contaminants of Concern

Contaminant	Location and Maximum[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Benzene	GW: SB: SS:	1 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Ethyl Benzene	GW: SB: SS:	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
Lead	GW: SB: SS:	0.05 mg/m^3	100	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA
PNAs (Limits as Coal Tar Pitch)	GW: SB: SS:	02 mg/m^3	80 Ca	Dermatitis and bronchitis	UK
Toluene	GW: SB: SS:	50 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
Xylenes	GW: SB: SS:	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56

Footnotes:
[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).
[b] Appropriate value of PEL, REL, or TLV listed.
[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.
[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.
ppm = parts per million
mg/m^3 – milligrams per cubic meter

4.0 Personnel

4.1 CCI Employee Medical Surveillance and Training

Reference CH2M HILL SOP HS-01, Medical Surveillance, and HS-02, Health and Safety Training

The employees listed in Table 4-1 are enrolled in the CH2M HILL Comprehensive Health and Safety Program and meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SHSS" have received 8 hours of supervisor and instrument training and can serve as SHSS for the level of protection indicated. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones that involve the potential for exposure to health and safety hazards. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and cardiopulmonary resuscitation (CPR). At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones that involve the potential for exposure to health and safety hazards. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL's SOP HS-04, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities, before being assigned fieldwork.

TABLE 4-1
Project Personnel Safety Certifications

Employee Name	Office	Responsibility	SHSS/FA-CPR
Sam Ross/J.A. Jones		Project Manager	
TBD		Site Superintendent	
Melvyn Caperell/J.A.Jones		SHSS	
Denny Brestle	ATL	QC Inspector	Level B SHSS; FA-CPR
Robert Nash	ATL	H&S Manager	Level B SHSS; FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 Client

Contact Name: Richard Stanley, Naval Facilities Engineering Command, North Charleston, South Carolina

4.2.2 CCI

Project Manager: Sam Ross/J.A. Jones

Health and Safety Manager: Robert Nash/ATL

Site Superintendent: TBD

Site Safety and Health Specialist: Melvyn Caperell/J.A.Jones

The SHSS is responsible for contacting the site superintendent and the project manager. In general, the project manager either will contact or will identify the client contact. The Health HSM should be contacted as appropriate. The SHSS or the project manager must notify the client and the HSM when a serious injury or a death occurs or when health and safety inspections by OSHA or other agencies are conducted. Refer to Sections 10 through 12 for emergency procedures and phone numbers.

4.2.3 Subcontractors

Reference Section 3, Corporate Health and Safety Program Manual

When specified in the project documents (e.g., contract), this plan may cover CCI subcontractors. However, this plan does not address hazards associated with tasks and equipment that the subcontractor has expertise in (e.g., operation of drill rig). Specialty subcontractors are responsible for health and safety procedures and plans specific to their work. Specialty subcontractors are to submit plans to CCI for review and approval before the start of fieldwork. Subcontractors must comply with the established health and safety plan(s). CCI must monitor and enforce compliance with the established plan(s).

General health and safety communication with subcontractors contracted with CCI and covered by this plan is to be conducted as follows:

- Request that the subcontractor, if a specialty subcontractor, submit a safety or health plan applicable to their expertise (e.g., drill-rig safety plan or nuclear density gauge [NDG] health plan); attach the reviewed plan.
- Supply subcontractors with a copy of this plan, and brief them on its provisions.
- Direct health and safety communication to the subcontractor-designated safety representative.
- Notify the subcontractor-designated representative if a violation of the plan(s) is observed. Specialty subcontractors are responsible for mitigating hazards in which they have expertise.
- If a hazard condition persists, inform the subcontractor. If the hazard is not mitigated, stop affected work as a last resort and notify the project manager.
- When an apparent imminent danger exists, promptly remove all affected personnel. Notify the project manager.
- Make clear that consistent violations of the health and safety plan by a subcontractor may result in termination of the subcontract.

5.0 Personal Protective Equipment

Reference CH2M HILL SOP HS-07, Personal Protective Equipment; HS-08, Respiratory Protection

5.1 PPE Specifications

PPE specifications are listed in Table 5-1.

TABLE 5-1
PPE Specifications[a]

Task	Level	Body	Head	Respirator[b]
General work uniform when no chemical exposure is anticipated	D	Work clothes; steel-toe, steel-shank leather work boots; work gloves	Hardhat[c] Safety glasses Ear protection[d]	None required
Soil Excavation	Modified D	**COVERALLS:** Uncoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant leather or arimid-fiber glove.	Hardhat[c] Splash shield[c] Safety glasses Ear protection[d]	None required
NOT APPROVED FOR THIS ACTIVITY	C	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-P100[e] cartridges or equivalent
NOT APPROVED FOR THIS ACTIVITY	B	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA): MSA Ultralite, or equivalent

Notes
[a] Modifications are as indicated. CCI will provide PPE to only CCI employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to determined by the SHSS.
[d] Ear protection should be worn while working around drill rigs or other noise-producing equipment or when conversations cannot be held at distances of 3 feet or less without shouting. Refer to Section 6 for other requirements.
[e] The GME-H cartridge is the new standard-issue cartridge. Available stock of the previously standard GMC-H cartridges may be used for tasks covered by this plan.

5.2 Upgrading or Downgrading Level of Protection

The reasons for upgrading or downgrading the PPE level are as follows:

- Upgrade
  - Request from individual performing task
  - Change in work task that will increase contact or potential contact with hazardous materials
  - Occurrence or likely occurrence of gas or vapor emission
  - Known or suspected presence of dermal hazards
  - Instrument action levels (Section 6) exceeded
- Downgrade
  - New information indicating that situation is less hazardous than originally thought
  - Change in site conditions that decreases the hazard
  - Change in work task that will reduce contact with hazardous materials

Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been specified in Section 5.0 and an SHSS who meets the requirements specified in Section 4.1 is present.

6.0 Air Monitoring Specifications

Reference CH2M HILL SOP HS-06, Air Monitoring

Air monitoring specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specifications

Instrument	Action Levels[a]	Frequency[b]	Calibration
FID OVA model 128 or equivalent	0 – ppm – Level D > ppm – Level C > ppm – Stop Work	Initially and periodically during task	Daily
CGI MSA model 260 or 261 or equivalent	0-10% LEL – No Explosion Hazard 10-25% LEL – Potential Explosion ≥25%LEL – Explosion Hazard; Evacuate or vent	Continuous during intrusive activities	Daily
O_2Meter: MSA model 260 or 261 or equivalent	>25% O_2 – Explosion Hazard evacuate or vent >19.5-25% O_2 – Normal <19.5 % O_2 – O_2 Deficient: vent or use SCBA	Continuous during intrusive activities	Daily
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube or equivalent	<0.5 ppm – Level D 0.5-1.0 ppm – Level C >1 ppm – Level B	Initially and periodically when PID/FID >1 ppm	

Notes
[a] Action levels apply to sustained breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; generally, every 5 to 15 minutes is acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time and measurement result, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).
[c] If the measured percent of O_2 is less than 10 percent, an accurate LEL reading will not be obtained. Percent LEL and percent O_2 action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O_2 action levels are required for confined space.

6.1 Calibration Specifications

Calibration specifications are listed in Table 6-2. Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures.

TABLE 6-2
Calibration Specifications

Instrument	Gas	Span	Reading	Method
FID: OVA-128	100 ppm methane	NA	100 ppm	2.5 lpm reg T-tubing
CGI: MSA 260,260,, 360, or 361	0.75% pentane	NA	50% LEL ± 5% LEL	1.5 lpm reg Direct-tubing

6.2 Air Sampling

Sampling may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

6.2.1 Method Description

Real time air monitoring will be performed. Contact HSM if assistance is required.

6.2.2 Personnel and Areas

Results must be sent immediately to the HSM. Regulations may require reporting to monitored personnel. Results reported to: **HSM:** Robert Nash/ATL.

7.0 Decontamination

Reference CH2M HILL SOP HS-13, Decontamination

The SHSS must monitor the effectiveness of the decontamination procedures. Decontamination procedures found to be ineffective will be modified by the SHSS.

7.1 Decontamination Specifications

Decontamination specifications are listed in Table 7-1.

TABLE 7-1
Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse	• Wash/rinse equipment	• Power wash
• Glove wash/rinse	• Solvent-rinse equipment	• Steam clean
• Body-suit removal	• **Solvent-disposal method:**	• **Water-disposal method:**
• Hand wash/rinse	Dispose in Drums	Dispose in Drums
• Face wash/rinse		
• Shower ASAP		
• **PPE-disposal method:** Dispose in drums		
• **Water-disposal method** Dispose in Drums		

7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a typical establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.

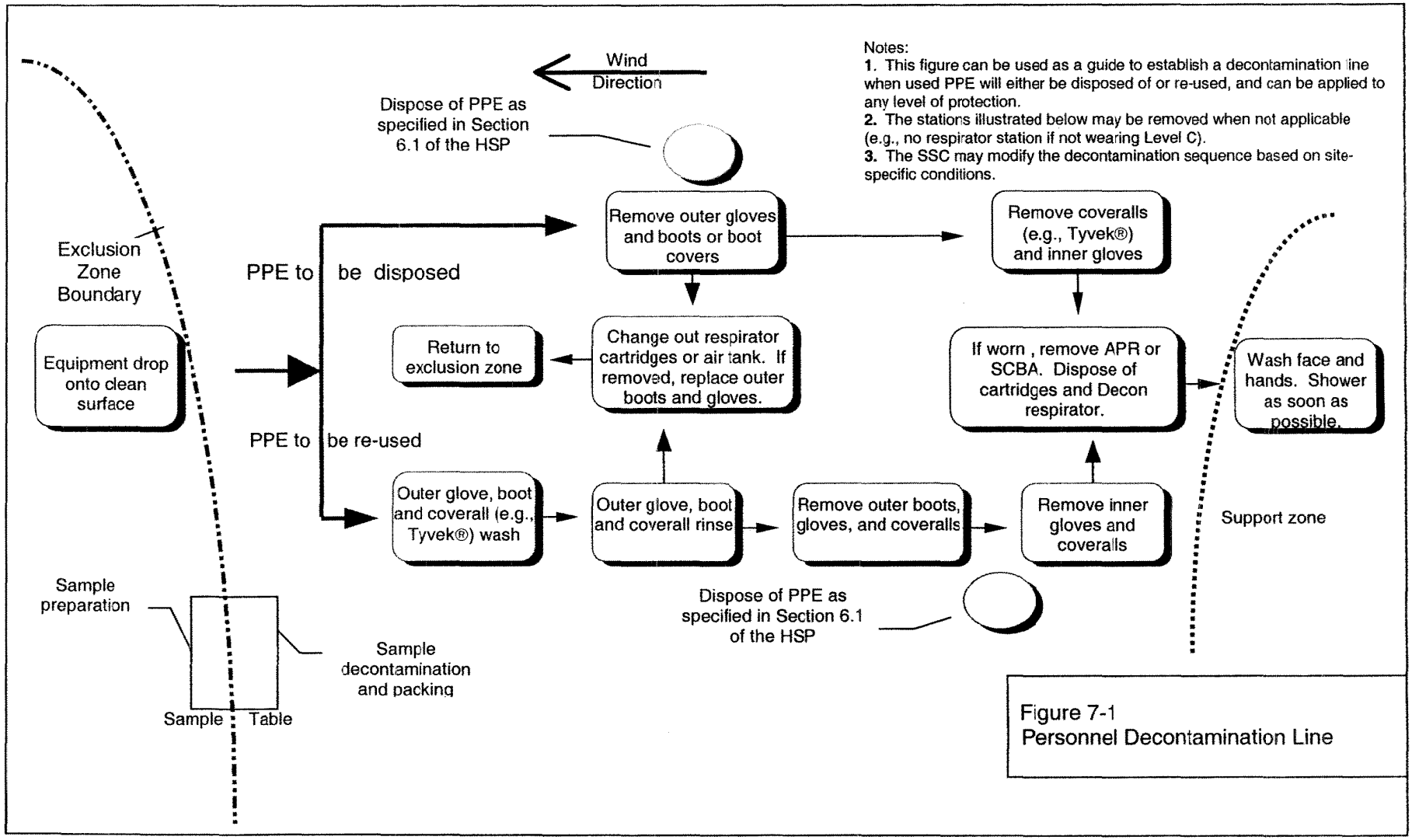


Figure 7-1
Personnel Decontamination Line

8.0 Spill Prevention and Control Plan

This Spill Prevention and Control Plan establishes minimum site requirements. Subcontractors are responsible for spill prevention and control related to their operations. Subcontractors written spill prevention and control procedures must be consistent with this plan. All spills must be reported to your supervisor, the site manager, and the Contract Manager.

8.1 Spill Prevention

All fuel and chemical storage areas will be properly protected from on-and off-site vehicle traffic. Fuel storage tanks must be equipped with secondary containment. Fuel tanks must be inspected daily for signs of leaks. Accumulated water must be inspected for signs of product before discharge.

Incidental chemical products must be properly stored, transferred, and used in a safe manner. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials must be maintained

8.2 Spill Containment and Control

Spill control materials will be maintained in the support zone and at fuel storage and dispensing locations. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby personnel and notify the work supervisor
- Assess the spill area to ensure that it is safe to approach
- Activate site evacuation signal if spill presents an emergency
- Ensure any nearby ignition sources are immediately eliminated
- If it can be done safely, stop the source of the spill
- Establish site control for the spill area
- Use proper PPE in responding to the spill
- Contain and control spilled material through the use of sorbent booms, pads, or other materials

8.3 Spill Cleanup and Removal

All spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated material will be disposed of according to applicable federal, state, and local requirements. Contact the regulatory compliance person for the project or the program for assistance.

9.0 Confined-Space Entry

Reference CH2M HILL SOP HS-17, Confined Space Entry

Confined-space entry requires health and safety procedures, training, and a permit. Activities to remove the oil/water separators may require confined space entry.

When planned activities include confined-space entry, permit-required confined spaces accessible to CCI personnel are to be identified before the task begins. The SHSS will confirm that permit spaces are properly posted or that employees are informed of their locations and informed of their hazards.

10.0 Site Control Plan

10.1 Site Control Procedures

The following site control procedures will be implemented for this CTO:

- The SHSS will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of health and safety plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- SHSS records attendance at safety briefings in logbook and documents topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location at sites where project field offices, trailers, or equipment storage boxes are established.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Determine wind direction.
- Establish work zones: support, decontamination, and exclusion zones. Delineate work zones with flags or cones as appropriate. SZ should be upwind of the site.
- Establish decontamination procedures, including respirator-decontamination procedures, and test the procedures.
- Use access control at the entry and exit from each work zone.
- Store chemicals in appropriate containers.
- Make MSDSs available for onsite chemicals to which employees are exposed.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Establish procedures for disposing of material generated on the site.
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.
- The SHSS is to conduct periodic inspections of work practices to determine the effectiveness of this plan -- refer to CH2M HILL SOP 18, *Health and Safety* Checklist. Deficiencies are to be noted, reported to the HSM, and corrected.

10.2 HAZWOPER Compliance Plan

Reference CH2M HILL SOP HS-17, Health and Safety Plans

The following procedures are to be followed when certain activities do not require 24- or 40-hour training. Note that prior approval from the HSM is required before these tasks are conducted on regulated hazardous waste sites.

- Certain parts of the site work may be covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated tasks must be included in Section 2.2.1.
- Air sampling must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are allowed on the site. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to Sections 3.8 and 6.2 for contaminant data and air sampling requirements, respectively.
- Non-HAZWOPER-trained personnel must be informed of the nature of the existing contamination and its locations, the limits of their access, and the emergency action plan for the site. Non-HAZWOPER-trained personnel also must be trained in accordance with all other state and federal OSHA requirements, including 29 CFR 1910.1200 (HAZCOM). Refer to Section 3.7.1 for hazard communication requirements.
- Air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to volatile contaminants. Non-HAZWOPER-trained personnel should be monitored whenever the belief is that there may be a possibility of exposure (e.g., change in site conditions), or at some reasonable frequency to confirm that there is no exposure. Refer to Section 6.1 for air monitoring requirements.
- Treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the HAZWOPER standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only HAZWOPER-trained personnel (minimum of 24 hours of training) will be permitted to enter the site. All non-HAZWOPER-trained personnel must leave the site.

If HAZWOPER-regulated tasks are conducted concurrently with nonregulated tasks, non-HAZWOPER-trained subcontractors must be removed from areas of exposure. If non-HAZWOPER-trained personnel remain on the site while a HAZWOPER-regulated task is conducted, the contaminant/exposure area (exclusion zone) must be posted, non-HAZWOPER-trained personnel must be reminded of the locations of restricted areas and the limits of their access, and real-time monitoring must be conducted. Non-HAZWOPER-trained personnel at risk of exposure must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

11.0 Emergency Response Plan

11.1 Pre-Emergency Planning

The SHSS performs applicable pre-emergency planning tasks before starting field activities and coordinates response with facility and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Locate the nearest telephone; determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Identify and communicate chemical, safety, radiological, and biological hazards.
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Post site map marked with locations of emergency equipment and supplies, and post OSHA job-site poster. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, and personnel availability in relation to emergency response procedures.
- Evaluate capabilities of local response teams where applicable.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases.
- Review notification procedures for contacting CCI's medical consultant and team member's occupational physician.
- Rehearse the emergency response plan once before site activities begin, including driving the route to the hospital.
- Brief new workers on the emergency response plan.
- SHSS will evaluate emergency response actions and initiate appropriate follow-up.

11.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and should post the map. Emergency equipment and its location are listed in Table 11-1.

TABLE 11-1
Emergency Equipment

Emergency Equipment and Supplies	Location
20 lb (or two 10-lb) fire extinguisher (A, B, and C classes)	In Field Vehicle
First aid kit	In Field Vehicle
Eye wash	In Field Vehicle
Potable water	In Field Vehicle
Bloodborne-pathogen kit	In Field Vehicle

11.3 Emergency Medical Treatment

Emergency medical treatment procedures are as follows:

- Notify emergency response authorities listed in Sections 12 and 13 (e.g., 911).
- During a time of no emergency, contact CCI's medical consultant for advice and guidance on medical treatment.
- The SHSS will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Notify the field team leader and the project manager of the injury.
- Make certain that the injured person is accompanied to the emergency room.
- Notify the health and safety manager.
- Notify the injured person's human resources department within 24 hours.
- Prepare an incident report -- refer to CH2M HILL SOP 12, *Emergency Response and First Aid*. Submit the report to the corporate director of health and safety and the corporate human resources department within 48 hours.
- When contacting the medical consultant, state that you are calling about a CCI matter, and give your name, your telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.

11.4 Non-emergency Procedures

The procedures listed above may be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources.

If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CCI medical consultant.

When contacting the medical consultant, state that the situation is a CCI matter, and give your name, your telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken. Follow these procedures as appropriate.

11.5 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Notify appropriate response personnel.
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

11.6 Evacuation

Evacuation procedures are as follows:

- Evacuation routes will be designated by the SHSS before work begins.
- Onsite and offsite assembly points will be designated before work begins.
- Personnel will leave the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.
- The SHSS and a "buddy" will remain on the site after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- The SHSS accounts for all personnel in the onsite assembly zone.
- A person designated by the SHSS before work begins will account for personnel at the offsite assembly area.
- The SHSS will write up the incident as soon as possible after it occurs and will submit a report to the corporate director of health and safety.

11.7 Evacuation Routes and Assembly Points

Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map posted at the site.

11.8 Evacuation Signals

Evacuation signals are listed in Table 11-2.

TABLE 11-2
Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency–help me
Thumbs up	OK; understood
Grasping buddy's wrist	Leave area now
Continuous sounding of horn	Emergency; leave site now

11.9 Emergency Response Telephone Numbers

Emergency response telephone numbers are listed in Table 11-1.

TABLE 11-1
Emergency Response Telephone Numbers

Site Address:	Phone: Cellular Phone:
Police: Base Security	**Phone:** 270-5583
Fire: Mayport Fire Department	**Phone:** 911 or 5111 (base phone) or 270-5333
Ambulance: Mayport Fire Department	**Phone:** 911 or 270-5444
Public Works Trouble Desk:	**Phone:** 270-7200
Hospital: Baptist Medical Center-Beaches	**Phone:** 904/247-2900
Address: 1350 13 Ave South, Jacksonville Beach, FL	

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should connect the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activate 911.

Route to Hospital:

- Leave Base and proceed SOUTH on Mayport Road 3.7 miles
- Mayport Road becomes SR A1A 0.5 Miles
- Turn LEFT at intersection of Atlantic Blvd (stay with SR-A1A) 0.1 miles
- Exit SR-10/Atlantic Blvd Ramp 0.1 miles
- Merge onto Atlantic Blvd and proceed 1.1 miles
- Turn RIGHT on North 3rd Street and proceed 3.4 miles
- Turn RIGHT on South 13th Ave and proceed 0.6 miles
- Baptist Medical Center is on LEFT

Total Distance 9.5 miles Travel time: ≈25 minutes

Emergency response telephone numbers are listed in Table 11-3.

TABLE 11-3
Emergency Response Telephone Numbers

Site Address:	Phone: Cellular Phone:
Police: Base Police	**Phone:** 904/542-2661 or 911
Fire: Base Fire Department	**Phone:** 904/542-3333 or 911
Ambulance: Base Fire Department	**Phone:** 904/542-3333 or 911
Hospital: St Vincent's Hospital **Address:** 1800 Barrs St., Jacksonville, FL	**Phone:** 904/387-7300

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should connect the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activate 911.

Route to Hospital:

From Main Gate, turn RIGHT onto US-17/Roosevelt Blvd	4.3 miles
Turn RIGHT onto St, Johns Ave	0.4 miles
Turn LEFT onto Herschel St/FL-211	0.1 miles
Turn SLIGHT RIGHT onto St. Johns Ave./FL-211	1.8 miles
Turn LEFT onto King St/FL-211	0.1 miles
Turn RIGHT onto Riverside Ave./FL-211	0.2 miles
Turn RIGHT onto Barrs St.	0.1 miles

Total Distance: 7.5 miles Travel time: 17 minutes

11.10 Government Agencies Involved in Project

Federal Agency and Contact Name: Naval Facilities Engineering Command

Contact the project manager. Generally, the project manager will contact relevant government agencies.

11.11 Emergency Contacts

If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured person. Notification **MUST** be made within 24 hours of the injury. Emergency contacts are listed in Table 11-4.

TABLE 11-4
Emergency Contacts

CCI Medical Consultant Dr. Peter P Greany WorkCare Inc. 333 S. Anita Drive Orange, CA 92868 800/455-6155 (After-hours calls will be returned within 20 minutes.)	**Occupational Physician (Local)**
CCI Drug-Free Workplace Program Administrator Alicia Sweeney/ATL 770/604-9095	**Site Safety and Health Specialist (SHSS)** Melvyn Caperell / J.A. Jones
Navy RAC Health and Safety Manager (HSM) Robert Nash/ATL 770/604-9095	**Project Manager** Sam Ross / J.A. Jones
Radiation Health Manager (RHM) Dave McCormack/SEA 206/453-5000	**Human Resources Manager** Nancy Orr /DEN 303/771-0925
Client Richard Stanley Naval Facilities Engineering Command	**Corporate Human Resources Department** Julie Zimmerman/COR 303/771-0900
Federal Express Dangerous Goods Shipping 800/238-5355 CH2M HILL Emergency Number for Shipping Dangerous Goods 800/255-3924	**Worker's Compensation and Auto Claims** Sterling Administrative Services 800/420-8926 After hours 800/497-4566 Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

12.0 Approval

This site-specific health and safety plan has been written for use by CCI only. CCI claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

12.1 Original Plan

Written by: **Date:**

Approved by: Robert Nash **Date:** April 2000

12.2 Revisions

Revisions Made by: **Date:**

Revisions Approved by: **Date:**

13.0 Distribution

Distribution for this plan is listed in Table 13-1.

TABLE 13-1
Distribution List

Name	Office	Responsibility	Number of Copies
Robert Nash	ATL	Health and Safety Manager/Approver	1
Sam Ross	JAX	Project Manager	1
TBD		Site Superintendent/Field Team	
Melvyn Caperell	JAX	Site Safety and Health Specialist	1
Client	NA	Client Project Manager	

Attachment 1

Employee Signoff

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The CCI project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	EMPLOYEE SIGNATURE	COMPANY	DATE

Attachment 2

Project Specific Chemical Product Hazard Communication Form

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSC shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: **Project Number:**

MSDSs will be maintained at the following location(s):

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	*Container labels* Identity	Hazard
Methane	1 liter, compressed	Support Zone			
Pentane	1 liter, compressed	Support Zone			
Methanol	< 1 Gallon	Support/Decon Zones			
Hexane	< 1 Gallon	Support/Decon Zones			
Alconox/Liquinox	< 1liter	Support/Decon Zones			

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 3

Chemical-Specific Training Form

CCI CHEMICAL-SPECIFIC TRAINING FORM

Location:	Project # :
SSHS:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

Attachment 4

Material Safety Data Sheets

Alconox ®

MATERIAL SAFETY DATA SHEET

Alconox, Inc.
9 East 40th Street, Suite 200
New York, NY 10016

I. IDENTIFICATION

Product Name (as appears on label)	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 1998
Chemical Family:	Anionic Powdered Detergent

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Melting Point:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.

IV. FIRE AND EXPLOSION DATA

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO_2, foam
Special Firefighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. REACTIVITY DATA

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO_2 on burning

VI. HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs readminister fluids. See a physician for discomfort.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VIII. CONTROL MEASURES

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

BACHARACH -- CALIBRATION GAS, METHANE 500 PPM IN AIR, 51-1816
MATERIAL SAFETY DATA SHEET
NSN: 663000N048469
Manufacturer's CAGE: 05083
Part No. Indicator: A
Part Number/Trade Name: CALIBRATION GAS, METHANE 500 PPM IN AIR, 51-1816

General Information

Company's Name: BACHARACH INC
Company's Street: 625 ALPHA DR
Company's City: PITTSBURGH
Company's State: PA
Company's Country: US
Company's Zip Code: 15238
Company's Emerg Ph #: 800-424-9300(CHEMTREC)
Company's Info Ph #: 412-963-2223
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 13DEC90
Safety Data Review Date: 17FEB94
MSDS Serial Number: BTYRS
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHANE. BP:-260F,-162C. MP:-296F,-182C. FL PT:-306F,-188C.
Ingredient Sequence Number: 01
Percent: 0.05
NIOSH (RTECS) Number: PA1490000
CAS Number: 74-82-8
OSHA PEL: N/K (FP N)
ACGIH TLV: ASPHYXIANT

Proprietary: NO
Ingredient: AIR, REFRIGERATED LIQUID; (AIR)
Ingredient Sequence Number: 02
Percent: 99.95
NIOSH (RTECS) Number: AX5271000
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ODORLESS, TASTELESS COMPRESSED GAS IN CYLINDERS.
Boiling Point: SEE ING 1
Melting Point: SEE ING 1
Vapor Pressure (MM Hg/70 F): (GAS)
Vapor Density (Air=1): 0.991
Specific Gravity: 0.673
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: 100
pH: N/A

Fire and Explosion Hazard Data

Flash Point: SEE ING 1
Flash Point Method: CC
Lower Explosive Limit: 5%
Upper Explosive Limit: 15%
Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N). THIS GAS IS NOT FLAMMABLE. COOL EXPOSED CONTAINERS W/WATER.
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). USE SHIELDING TO PROTECT FROM CYLINDER EXPLOSION.
Unusual Fire And Expl Hazrds: THIS MIXT IS BELOW LEL OF METHANE & NON-FLAMM. COMPRESSED AIR/METHANE MIXTS AT HIGH PRESS WILL ACCELERATE BURNING OF OTHER MATLS. GAS CYLS EXPOS TO HEAT(SUPDAT)

Reactivity Data

Stability: YES
Cond To Avoid (Stability): AVOID HEAT OR FLAMES.
Materials To Avoid: NONE KNOWN.
Hazardous Decomp Products: NONE KNOWN.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE:EYE/SKIN:NONE KNOWN OR EXPECTED. INHAL:NONE. METHANE IS NON-TOXIC SIMPLE ASPHYXIANT. CONCENTRATION OF METHANE IN THIS GAS IS TOO LOW TO DEPRESS OXYGEN CONCENTRATION. INGEST:NOT APPLICABLE. THIS MATERIAL IS A GAS. METHANE IS BIOLOGICALLY INACTIVE & ESSENTIALLY NON TOXIC. CHRONIC:NONE KNOWN OR EXPECTED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: NONE SPECIFIED BY MANUFACTURER.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INGEST:CALL MD IMMEDIATELY (FP N). INHAL: REMOVE IMMEDIATELY FLUSH W/POTABLE WATER FOR A MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM MD (FP N). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N). NONE NEEDED (MFR).

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: NONE NEEDED. THIS MATERIAL IS NON TOXIC & NON-FLAMMABLE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSE I/A/W ALL LOCAL, STATE & FEDERAL REGULATIONS. DO NOT INCINERATE CYLINDER.
Precautions-Handling/Storing: DO NOT STORE CYLS NEAR HEAT/OPEN FLAME. EXPOS TO TEMPS 130F MAY CAUSE RUPTURE. SECURE CYLS - DO NOT DROP. CONTENTS UNDER PRESS.
Other Precautions: DO NOT PUNCTURE. NEVER THROW CNTNR INTO FIRE/INCIN. KEEP CYLS SECURED. DO NOT DROP/DMG. USE PRESS REGULATOR WHEN CONNECTING TO

LOWER PRESS PIPING SYS. USE CHECK VALVE TO PVNT BACKFLOW. KEEP CYLS AWAY FROM HEAT & FLAMES. FOR ADDNL (SUPDAT)

Control Measures

Respiratory Protection: NONE NEEDED. SELECTION OF NIOSH/MSHA APPROVED RESPIRATORY PROTECTION DEPENDS ON CONTAMINANT TYPE, FORM & CONCENTRATION. SELECT I/A/W OSHA 1910.134 & GOOD INDUSTRIAL HYGIENE PRACTICE.
Ventilation: NO SPECIAL VENTILATION REQUIRED.
Protective Gloves: LEATHER GLOVES.
Eye Protection: SAFETY GLASSES.
Other Protective Equipment: NONE NEEDED.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: EXPLO HAZ:OR FLAME MAY VENT RAPIDLY/EXPLODE. OTHER PREC:HNDLG RECS ON COMPRESSED GAS CYLS, CONSULT COMPRESSED GAS ASSOC PAMPHLET P-1. PROTECT FROM HEAT & PHYSICAL DMG.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 17FEB94
Label Date: 16FEB94
Label Status: G
Common Name: CALIBRATION GAS, METHANE 500 PPM IN AIR, 51-1816
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-None: X
Contact Hazard-None: X
Fire Hazard-Slight: X
Reactivity Hazard-None: X
Special Hazard Precautions: NON-FLAMMABLE, BUT COMPRESSED AIR/METHANE WILL ACCELERATE BURNING OF OTHER MATERIALS. CYLINDERS EXPOSED TO HIGH HEAT MAY EXPLODE. ACUTE:EYE/SKIN:NONE KNOWN OR EXPECTED. INHAL:NONE. METHANE IS NON-TOXIC SIMPLE ASPHYXIANT. CONCENTRATION OF METHANE IN THIS GAS IS TOO LOW TO DEPRESS OXYGEN CONCENTRATION. INGEST:NOT APPLICABLE. THIS MATERIAL IS A GAS. CHRONIC:NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: BACHARACH INC
Label Street: 625 ALPHA DR
Label City: PITTSBURGH
Label State: PA
Label Zip Code: 15238
Label Country: US
Label Emergency Number: 800-424-9300(CHEMTREC)

LIQUID AIR -- 0.35% PENTANE AND 19% OXYGEN IN NITROGEN.
MATERIAL SAFETY DATA SHEET
NSN: 683000N055373
Manufacturer's CAGE: 18260
Part No. Indicator: A
Part Number/Trade Name: 0.35% PENTANE AND 19% OXYGEN IN NITROGEN.

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General Information

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Company's Name: LIQUID AIR CORP
Company's Street: CA PLZ 2121 N CALIFORNIA BLVD
Company's City: WALNUT CREEK
Company's State: CA
Company's Country: US
Company's Zip Code: 94596
Company's Emerg Ph #: 800-424-9300(CHEMTREC)
Company's Info Ph #: 415-977-6500
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01JAN92
Safety Data Review Date: 13OCT95
MSDS Serial Number: BWBDG
Hazard Characteristic Code: G3

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: PENTANE; BP:97F (36C) VP:@ 100F(37.8C)=15 PSIA (103 KPA) MP:-201.5F (-129.7C)
Ingredient Sequence Number: 01
Percent: 0.35
NIOSH (RTECS) Number: RZ9450000
CAS Number: 109-66-0
OSHA PEL: 1000 PPM
ACGIH TLV: 600 PPM

Proprietary: NO
Ingredient: OXYGEN; BP:-297.3F (-182.9C), VP:IS ABOVE THE CRITICAL TEMPERATURE @ 70F(21.1C), MP:-361.8F (-218.8C).
Ingredient Sequence Number: 02
Percent: 19
NIOSH (RTECS) Number: RS2060000
CAS Number: 7782-44-7
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Proprietary: NO
Ingredient: NITROGEN; BP -320.5F (-195.8C), VP:ABOVE THE CRITICAL TEMPERATURE @ 70F (21.1C), MP: -345.9F (-209.9C).
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: QW9700000
CAS Number: 7727-37-9
OSHA PEL: N/K (FP N)
ACGIH TLV: ASPHYXIANT

Proprietary: NO

Ingredient: SUP DAT:EMER EXISTS. DO NOT ALLOW TEMP WHERE CYLS ARE STORED TO EXCEED 125F (52C). FULL & EMPTY CYLS SHOULD BE (ING 5)
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 4:BE SEGREGATED. USE A "FIRST IN-FIRST OUT" INVENTORY SYS TO PVNT FULL CYLS BEING STORED FOR EXCESSIVE (ING 6)
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 5:PERIODS OF TIME. THIS MIX IS NONCORR & MAY BE USED W/ALL MATLS OF CONSTRUCT. MOISTURE CAUSES METAL OXIDES (ING 7)
Ingredient Sequence Number: 06
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 6:WHICH ARE FORMED W/AIR TO BE HYDRATED SO THAT THEY INCREASE IN VOLUME & LOSE THEIR PROT ROLE (RUST (ING 8)
Ingredient Sequence Number: 07
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 7:FORMATION). CONCS OF SO*2, CL*2, SALT, ETC. IN THE MOISTURE ENHANCES THE RUSTING OF METALS IN AIR.
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: OTHER PREC:TITLE III, SECTION 313 NOT REQUIRED.
Ingredient Sequence Number: 09
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS GAS WITH VERY SLIGHT PARAFFINIC ODOR.
Boiling Point: SEE INGS
Melting Point: SEE INGS
Vapor Pressure (MM Hg/70 F): SEE INGS
Specific Gravity: (SUPP DATA)
Solubility In Water: VERY SLIGHTLY

Fire and Explosion Hazard Data

Flash Point: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: NONFLAMMABLE GAS MIXTURE.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). IF CYLINDERS ARE INVOLVED IN A FIRE, SAFELY RELOCATE OR KEEP COOL WITH WATER SPRAY.
Unusual Fire And Expl Hazrds: THIS MIXTURE AT HIGH PRESSURES WILL ACCELERATE THE BURNING OF MATERIALS TO A GREATER RATE THAN THEY BURN AT ATMOSPHERIC PRESSURE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE.
Materials To Avoid: NONE
Hazardous Decomp Products: NONE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: THIS MIXTURE SHOULD BE CONSIDERED SIMILAR TO AIR AND WOULD THEREFORE CAUSE NO SYMPTOMS OF EXPOSURE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INGEST:CALL MD IMMEDIATELY (FP N). INHAL: REMOVE IMMEDIATELY FLUSH W/POTABLE WATER FOR A MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM MD (FP N). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N).

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: NONE SPECIFIED BY MANUFACTURER.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N).
Precautions-Handling/Storing: USE A PRESS REDUCING REGULATOR WHEN CONNECTING CYLINDER TO LOWER PRESS (<500 PSIG) PIPING/SYSTEMS. DO NOT HEAT CYLINDER BY ANY MEANS TO (SUPP DATA)
Other Precautions: DOT 39 CYLS MAY NOT BE REUSED/REFILLED (49CFR). NEVER TRANSPORT THESE CYLS IN TRUNKS OF VEHICLES, ENCLSD VANS, TRUCK CABS/IN PASSENGER COMPARTMENTS. TRANSPORT THEM "CNTND" IN OPEN FLATBED/PICKUP TYPE VEHICLES. RPTDG UNDER SARA, (ING 9)

Control Measures

Respiratory Protection: USE NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).

Ventilation: NONE
Protective Gloves: IMPERVIOUS GLOVES (FP N).
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: SAFETY SHOES.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: SPEC GRAV:(AIR=1 @ 70F (21.1C)=1.00. HNDLG/ STOR PREC:INCREASE DISCHARGE RATE OF PROD FROM CYL. USE A CHECK VALVE/TRAP IN DISCHARGE LINE TO PVNT HAZ BACK FLOW INTO CYL. CLOSE VALVE AFTER EACH USE & WHEN EMPTY. PROT CYLS FROM PHYSICAL DMG. STORE IN COOL, DRY, WELL VENT AREA AWAY FROM HEAVILY TRAFFICKED AREAS & (ING 4)

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 18NOV94
Label Status: G
Common Name: 0.35% PENTANE AND 19% OXYGEN IN NITROGEN.
Chronic Hazard: NO
Signal Word: NONE
Acute Health Hazard-None: X
Contact Hazard-None: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: THIS MIXTURE SHOULD BE CONSIDERED SIMILAR TO AIR AND WOULD THEREFORE CAUSE NO SYMPTOMS OF EXPOSURE.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: LIQUID AIR CORP
Label Street: CA PLZ 2121 N CALIFORNIA BLVD
Label City: WALNUT CREEK
Label State: CA
Label Zip Code: 94596
Label Country: US
Label Emergency Number: 800-424-9300(CHEMTREC)

ALDRICH CHEMICAL SUB OF SIGMA-ALDRICH -- 65550 METHANOL
MATERIAL SAFETY DATA SHEET
NSN: 681000F030311
Manufacturer's CAGE: 60928
Part No. Indicator: A
Part Number/Trade Name: 65550 METHANOL

General Information

Company's Name: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Company's Street: 1001 W ST PAUL AVE
Company's P. O. Box: 355
Company's City: MILWAUKEE
Company's State: WI
Company's Country: US
Company's Zip Code: 53233
Company's Emerg Ph #: 800-325-5832-S/800-231-8327-A
Company's Info Ph #: 800-325-5832-S/800-231-8327-A
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01APR92
Safety Data Review Date: 30SEP93
Preparer's Company: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Preparer's St Or P. O. Box: 1001 W ST PAUL AVE
Preparer's City: MILWAUKEE
Preparer's State: WI
Preparer's Zip Code: 53233
MSDS Serial Number: BRXZV

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHANOL (METHYL ALCOHOL), COLUMBIAN SPIRITS
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S,200PPM/250STEL
ACGIH TLV: S,200PPM/250STEL; 93
Other Recommended Limit: 200 PPM

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 64.6C
Melting Point: -98C
Vapor Pressure (MM Hg/70 F): 97.68
Vapor Density (Air=1): 1.1
Specific Gravity: 0.791

Fire and Explosion Hazard Data

Flash Point: 52F
Lower Explosive Limit: 6%
Upper Explosive Limit: 36%
Extinguishing Media: CO2, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS & FULL

PROTECTIVE CLOTHING.
Unusual Fire And Expl Hazrds: VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO 725F.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS, OPEN FLAME OR OTHER SOURCES OF IGNITION.
Materials To Avoid: ACIDS, ACID CHLORIDES, ACID ANHYDRIDES, OXIDIZING/ REDUCING AGENTS, ALKALI METALS.
Hazardous Decomp Products: CO, CO2
Hazardous Poly Occur: NO

Health Hazard Data

LD50-LC50 Mixture: ORAL LD50 (RAT): 5628 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR OR MIST IS IRRITATING TO THEY EYES, MUCOUS MEMBRANES, SKIN, & UPPER RESPIRATORY TRACT. CAN CAUSE DAMAGE TO THE EYES, LIVER, HEART, KIDNEYS. GASTROINTESTINAL DISTURBANCES & CONVULSIONS. MAY CAUSE BLINDNESS IF INGESTED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: OPTIC NERVE NEUROPATHY, VISUAL FIELD CHANGES, HEADACHE, DYSPNEA, NAUSEA, VOMITING.
Med Cond Aggravated By Exp: CUTS, SCRATCHES
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MINS WHILE REMOVING CONTAMINATED CLOTHING & SHOES. INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHIG IS DIFFICULT, GIVE OXYGEN. INGESTION: WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. DISCARD CONTAMINATED CLOTHING & SHOES. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. SHUT OFF ALL IGNITION SOURCES. USE PROTECTIVE EQUIP. COVER W/DRY-LIME, SAND OR SODA ASH. PLACE IN COVERED CONTAIERS USING NON-SPARKING TOOLS & TRANSPORT OUTDOORS. VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
Neutralizing Agent: DRY LIME, SAND OR SODA ASH
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL FEDERAL, STATE & LOCAL LAWS. UN1230.
Precautions-Handling/Storing: KEEP TIGHTLY CLOSED & AWAY FROM HEAT, SPARKS & OPEN FLAME. PRODUCT IS HYGROSCOPIC. STORE IN A COOL DRY PLACE. NO SMOKING. CANNOT BE MADE NON-POISONOUS
Other Precautions: AVOID CONTACT W/EYES, SKIN, CLOTHING & BREATHING OF VAPORS. DON'T USE IF SKIN IS CUT OR SCRATCHED.

Control Measures

Respiratory Protection: WEAR AN APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: MECHANICAL EXHAUST
Protective Gloves: CHEMICAL RESISTANT
Eye Protection: SAFETY GOGGLES
Other Protective Equipment: RUBBER BOOTS, SAFETY SHOWER, EYE BATH
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 30SEP93
Label Date: 17SEP93
Label Status: F
Common Name: 65550 METHANOL
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Severe: X
Fire Hazard-Severe: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR OR MIST IS IRRITATING TO THEY EYES, MUCOUS MEMBRANES, SKIN, & UPPER RESPIRATORY TRACT. CAN CAUSE DAMAGE TO THE EYES, LIVER, HEART, KIDNEYS. GASTROINTESTINAL DISTURBANCES & CONVULSIONS. MAY CAUSE BLINDNESS IF INGESTED. TARGET ORGANS: EYES, SKIN, LIVER, HEART, KIDNEYS, RESPIRATORY & DIGESTIVE TRACTS. DIGESTIVE TRACTS, LIVER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ALDRICH CHEMICAL CO SUB OF SIGMA-ALDRICH
Label Street: 1001 W ST PAUL AVE
Label P.O. Box: 355
Label City: MILWAUKEE
Label State: WI
Label Zip Code: 53233
Label Country: US
Label Emergency Number: 800-325-5832-S/800-231-8327-A
Year Procured: UNK

ALDRICH CHEMICAL -- HEXANE ACS GRADE - N-HEXANE
MATERIAL SAFETY DATA SHEET
NSN: 681000N040300
Manufacturer's CAGE: 60928
Part No. Indicator: A
Part Number/Trade Name: HEXANE ACS GRADE

General Information

Item Name: N-HEXANE
Company's Name: ALDRICH CHEMICAL CO
Company's P. O. Box: 355
Company's City: MILWAUKEE
Company's State: WI
Company's Country: US
Company's Zip Code: 53201
Company's Emerg Ph #: 414-273-3850
Company's Info Ph #: 414-273-3850
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 04AUG92
Safety Data Review Date: 03MAR93
MSDS Serial Number: BRZJT
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: HEXANE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: MN9275000
CAS Number: 110-54-3
OSHA PEL: 500 PPM
ACGIH TLV: 50 PPM; 9293

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID
Boiling Point: 154F,68C
Vapor Pressure (MM Hg/70 F): 132@20C
Vapor Density (Air=1): 3
Specific Gravity: 0.661

Fire and Explosion Hazard Data

Flash Point: -10F,-23C
Lower Explosive Limit: 1.2%
Upper Explosive Limit: 7.7%
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.
Unusual Fire And Expl Hazrds: VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASH BACK. CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS. EXTREMELY FLAMMABLE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS AND OPEN FLAME.
Materials To Avoid: OXIDIZING AGENTS. CHLORINE, FLUORINE, MAGNESIUM PERCHLORATGE.
Hazardous Decomp Products: TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORAL,RAT)28710 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THRU SKIN. VAPOR OR MIST IS IRRITATING TO EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. CAUSES SKIN IRRITATION. MAY CAUSE NERVOUS SYSTEM DISTURBANCES. EXPOSURE CAN CAUSE: COUGHING, CHEST PAINS, DIFFICULTY IN BREATHING. LUNG IRRIT, CHEST PAIN (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZ: & EDEMA WHICH MAY BE FATAL. GI DISTURBANCES, NAUSEA, HEADACHE AND VOMITING.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES: IMMED FLUSH W/COPIOUS AMTS OF WATER FOR @ LST 15 MIN & SEEK MED ADVICE. SKIN: IMMED FLUSH W/COPIOUS AMTS OF WATER FOR @ LST 15 MIN WHILE REMOVING CONTAMD CLTHG & SHOES. WASH CONTAMD CLTHG BEFORE REUSE. INHAL: REMOVE TO FRESH AIR. IF NOT BRTHG GIVE ARTF RESP. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGEST: WASH OUT MOUTH W/ WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVAC AREA. SHUT OFF ALL SOURCES OF IGNIT. WEAR NIOSH/MSHA APPRVD SCBA, RUBB BOOTS & HEAVY RUBB GLOVES. COVER W/AN ACTIVATED CARBON ABSORB, TAKE UP & PLACE IN CLSD CONTRS. TRANSPORT OUTDOORS. VENT AREA & WASH SPILL SITE AFTER MATL PICKUP IS COMPLETE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.
Precautions-Handling/Storing: KEEP TIGHTLY CLSD. STORE IN A COOL DRY PLACE. DO NOT BREATHE VAP. AVOID CONT W/EYES/SKIN/CLTHG. IRRITANT. HARMFUL VAP. NEUROLOGICAL HAZARD.
Other Precautions: KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.

Control Measures

Respiratory Protection: WEAR APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: USE ONLY IN A CHEMICAL FUME HOOD.

Protective Gloves: CHEMICAL-RESISTANT GLOVES.
Eye Protection: CHEMICAL SAFETY GOGGLES.
Other Protective Equipment: OTHER PROTECTIVE CLOTHING, SAFETY SHOWER AND EYE BATH.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 03MAR93
Label Date: 03MAR93
Label Status: G
Common Name: HEXANE ACS GRADE
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: STORE IN A COOL DRY PLACE. DO NOT BREATHE VAPOR. AVOID CONTACT W/EYES/SKIN/CLTHG. IRRITANT. HARMFUL VAPOR. HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THRU SKIN. VAPOR/MIST IS IRRITATING TO EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. CAUSES COUGHING, CHEST PAINS, DIFFICULTY IN BREATHING, LUNG IRRITATION, CHEST PAIN & EDEMA WHICH MAY BE FATAL. GI DISTURBANCES, NAUSEA, HEADACHE AND VOMITING. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: ALDRICH CHEMICAL CO
Label P.O. Box: 355
Label City: MILWAUKEE
Label State: WI
Label Zip Code: 53201
Label Country: US
Label Emergency Number: 414-273-3850

Attachment 5

Self Assessment Checklist

CH2MHILL ***JOBSITE SAFETY INSPECTION CHECKLIST*** Revision.: 03

STANDARD OF PRACTICE HS-18 - HEALTH AND SAFETY CHECKLIST Date: 05/01/98

Note: The following jobsite safety inspection checklist is to be used only at locations where CCI controls the work. It is not to be used at locations where others control the work.

Project Name: _____ Project No.: _____

Location: _____ Project Manager: _____

Inspector: _____ Date: _____

This checklist has been divided into two sections. The first section (I through XXVI) are applicable to all projects. The second section (XXVII through XXIX) addresses specific situations such as hazardous waste, construction activities, and office trailers. There may be some duplication between the first and second sections.

If an item is not applicable, the column titled "N/A" should be checked. If an item is applicable but the auditor does not observe it during the inspection, the "N/O" column should be checked. For each deficiency noted, a Health and Safety Audit Finding Form must be completed. The Corporate Health and Safety Director must be copied on the results of all audits.

Check "Yes" for Items Completed	**Yes**	**No**	**N/A**	**N/O**
I. JOBSITE OFFICE				
1. Posters and safety signs in place:				
a. OSHA safety poster	☐	☐	☐	☐
b. Emergency Telephone Number Form	☐	☐	☐	☐
c. Workers Compensation Form	☐	☐	☐	☐
2. First aid kit:				
a. Fully stocked/sufficient supply	☐	☐	☐	☐
b. First-aid administered by a person with a valid certificate	☐	☐	☐	☐
3. Bloodborne-pathogen kit	☐	☐	☐	☐
4. Accident/injury reporting:				
a. Employees briefed	☐	☐	☐	☐
b. Forms available	☐	☐	☐	☐
c. All injuries and illnesses reported and logged	☐	☐	☐	☐
d. Accidents investigated and properly followed up to prevent	☐	☐	☐	☐
e. Accident reports and logs submitted promptly as required	☐	☐	☐	☐

5.	Job safety rules and regulations available/posted	☐	☐	☐	☐
II.	**HAZARD COMMUNICATION**				
1.	Employee training:				
	a. Employees' signed training certificates on file	☐	☐	☐	☐
2.	Material safety data sheets (MSDSs):				
	a. MSDSs on file	☐	☐	☐	☐
	b. Log assigned to competent person	☐	☐	☐	☐
	c. Log complete and up to date	☐	☐	☐	☐
3.	Written program on file	☐	☐	☐	☐
III.	**EMPLOYEE TRAINING**				
1.	Safety indoctrination held for new employees	☐	☐	☐	☐
2.	Sufficient instruction given in recognition and avoidance of job hazards; unsafe conditions; and job rules, regulations, and procedures	☐	☐	☐	☐
3.	Sufficient instruction in proper use and maintenance of tools, equipment, and personal protective equipment	☐	☐	☐	☐
4.	Employees instructed to report unsafe or hazardous conditions to proper job supervisor	☐	☐	☐	☐
5.	Employees instructed to promptly report injury, illness, and accidents involving damage to equipment and materials	☐	☐	☐	☐
6.	All site personnel have read the job safety rules and regulations and have signed the "Employee Signoff Sheet"	☐	☐	☐	☐
IV.	**JOBSITE LOGISTICS AND LAYOUT**				
1.	Traffic routes around construction areas:				
	a. Warning signs, flagging in place	☐	☐	☐	☐
	b. Crane swing flagged	☐	☐	☐	☐
2.	Utility ditches:				
	a. Flagged or barricaded	☐	☐	☐	☐
3.	Trucks and heavy equipment:				
	a. Good mechanical conditions	☐	☐	☐	☐
	b. Backup signals working	☐	☐	☐	☐
	c. Seat belts installed and used	☐	☐	☐	☐
4.	Motor graders and other earth movers:				
	a. Good mechanical conditions	☐	☐	☐	☐
	b. Backup signals working	☐	☐	☐	☐
	c. Seat belts installed and used	☐	☐	☐	☐

V. PUBLIC PROTECTION

1.	Warning signs in place around site	☐	☐	☐	☐
2.	After-hours hazards:				
	a. Open ditches protected	☐	☐	☐	☐
3.	Hazard lights	☐	☐	☐	☐

VI. HOUSEKEEPING

1.	Material storage yard:				
	a. Stacked neatly and properly	☐	☐	☐	☐
	b. Aisles, walkways, roads clear	☐	☐	☐	☐
2.	Check work areas for:				
	a. Loose and waste materials	☐	☐	☐	☐
	b. Vicinity of ladders, stairs, ramps, and machinery	☐	☐	☐	☐
	c. Empty bottles, containers, papers, trash, bands, brick-bats, etc.	☐	☐	☐	☐
	d. Trash cans, dumpsters available and emptied regularly	☐	☐	☐	☐
	e. Nails, boards, debris removed	☐	☐	☐	☐
	f. Trash receptacles provided for drinking cups	☐	☐	☐	☐

VII. PERSONAL PROTECTIVE EQUIPMENT (PPE)

1.	Hard hats	☐	☐	☐	☐
2.	Safety shoes/boots	☐	☐	☐	☐
3.	Eye/face protection	☐	☐	☐	☐
4.	Ear protection:				
	a. Noise level areas of 90 dBA and above identified	☐	☐	☐	☐
	b. Signs notifying personnel of "Hearing Protection Required" posted	☐	☐	☐	☐
5.	Specialized equipment:				
	a. Gloves	☐	☐	☐	☐
	b. Chemical-resistant clothing	☐	☐	☐	☐
7.	Tools:				
	a. Handles in good shape	☐	☐	☐	☐
	b Tool guards in place	☐	☐	☐	☐
	c. Proper tools used for the job	☐	☐	☐	☐
	d. Tools maintained in functional condition (hammer heads not mushroomed)	☐	☐	☐	☐

VIII. SANITATION

1.	Temporary toilets:				
	a. Serviced regularly	☐	☐	☐	☐
	b. Sufficient Quantity (20 or fewer employees - 1 required; 20 or more employees - 1 toilet and 1 urinal per 40 workers	☐	☐	☐	☐
2.	Potable Water:				
	a. Tightly closed containers	☐	☐	☐	☐
	b. Equipped with tap	☐	☐	☐	☐
	c. Paper cups available	☐	☐	☐	☐
	d. Containers labeled "Drinking Water"	☐	☐	☐	☐

IX. FLOOR AND WALL OPENINGS GUARDS

X. PORTABLE LADDERS (straight, extension, step)

1.	Inspected and in good conditions (not painted)	☐	☐	☐	☐
2.	Ladders must not be tied or fastened together unless specifically designed for such a use	☐	☐	☐	☐
3.	Properly secured top and bottom	☐	☐	☐	☐
4.	All straight and extension ladders equipped with safety shoes and/or blocked off in use	☐	☐	☐	☐
5.	Rails extend at least 36 inches above landing or work platform	☐	☐	☐	☐
6.	Step ladders fully open when in use	☐	☐	☐	☐
7.	Metal ladders not used around electrical hazards	☐	☐	☐	☐
8.	Defective ladders tagged and removed from work area	☐	☐	☐	☐
9.	Properly maintained and stored	☐	☐	☐	☐
10.	Ladder areas barricaded where required	☐	☐	☐	☐
11.	Personnel instructed on care, use and inspection of ladders.	☐	☐	☐	☐

XI. FIXED LADDERS

XII. SCAFFOLDING

XIII. ELECTRICAL

1.	Cords/devices have current inspection color code tape installed	☐	☐	☐	☐
2.	Frayed cords, broken plugs fixed	☐	☐	☐	☐
3.	Temporary wiring:				
	a. Panels secured and GFCIs working	☐	☐	☐	

	b. Away from vehicle pathways	☐	☐	☐	☐
	c. Out of water/moisture	☐	☐	☐	☐
	d. No broken receptacles found	☐	☐	☐	☐
	e. Sufficient outlets for all crafts	☐	☐	☐	☐
4.	Assured equipment grounding conductor program in place, if not using GFCIs	☐	☐	☐	☐
5.	Lock-out or tag-out system used when necessary	☐	☐	☐	☐
6.	Electrical dangers posted and guarded	☐	☐	☐	☐
7.	Only qualified electricians work on electrical circuits and equipment	☐	☐	☐	☐
8.	Cords passing through work areas must be covered or elevated to protect them from damage	☐	☐	☐	☐
9.	Extension cords must be hard or extra-hard usage	☐	☐	☐	☐

XIV. TEMPORARY HEATERS

XV. FIRE PROTECTION

1.	Office fire extinguisher in working order and inspected regularly	☐	☐	☐	☐
2.	One extinguisher, 2A rating, for each 3,000 square feet of protected area	☐	☐	☐	☐
3.	One extinguisher, 2A rating, on each floor adjacent to each stairway	☐	☐	☐	☐
4.	Trash, paper, other combustibles picked up	☐	☐	☐	☐
5.	Welders/roofers have extinguishers nearby and a fire watch is available if needed	☐	☐	☐	☐
6.	Fire alarm available/fire evacuation plan	☐	☐	☐	☐
7.	"No Smoking" signs posted and enforced where necessary	☐	☐	☐	☐
8.	Supervisors and employees trained in proper use of extinguishers	☐	☐	☐	☐

XVI. MATERIAL STORAGE AND HANDLING

1.	Neat storage area, clear passageways	☐	☐	☐	☐
2.	Materials spotted to minimize rehandling and reduce transport distances	☐	☐	☐	☐
3.	Power equipment used to handle heavy/awkward loads	☐	☐	☐	☐
4.	Stacks on firm footing and all tier stacked materials secured against sudden movement	☐	☐	☐	☐

5.	Storage platforms, skids, bins, shelves, etc. in good repair	☐	☐	☐	☐
6.	Protruding nails and wires removed and rugged metal edges protected before material is handled	☐	☐	☐	☐
7.	Lifting weights known before handling	☐	☐	☐	☐
8.	Employees using proper lifting methods, picking up loads correctly	☐	☐	☐	☐
9.	Proper number of employees for each operation, physically suited for task	☐	☐	☐	☐
10.	Tag lines used to control loads	☐	☐	☐	☐
11.	Protection provided against falling hazards	☐	☐	☐	☐
12.	Dust protection observed	☐	☐	☐	☐
13.	Extinguishers or other fire protection available	☐	☐	☐	☐
14.	Combustibles, flammable, and other unrelated materials separated and clearly identified	☐	☐	☐	☐
15.	"No Smoking" signs posted where necessary	☐	☐	☐	☐
16.	Safe loading limits observed for indoor storage	☐	☐	☐	☐

XVII. DEMOLITION WORK

1.	Operations planned ahead and checked for lead and asbestos if applicable	☐	☐	☐	☐
2.	Safety work permit required and necessary blinding of lines, etc., accomplished	☐	☐	☐	☐
3.	Adjacent structures shored or braced	☐	☐	☐	☐
4.	Electrical, water, sewer, steam lines cut off, locked out, or tagged	☐	☐	☐	☐
5.	Area roped off or barricaded	☐	☐	☐	☐
6.	Proper safety, danger, and warning signs provided and used	☐	☐	☐	☐
7.	Adequate lighting and ventilation provided where necessary	☐	☐	☐	☐
8.	Material chutes used	☐	☐	☐	☐
9.	Adequate safe access provided	☐	☐	☐	☐
10.	Clear operating space provided for equipment and vehicles	☐	☐	☐	☐
11.	Overhead protection provided where required	☐	☐	☐	☐

12.	Proper fire extinguishing equipment in place	☐	☐	☐	☐
13.	Full clothing, serviceable shoes, and adequate PPE (hard hats, goggles, gloves, safety belts, respirators, ear plugs or muffs, etc.) provided	☐	☐	☐	☐
14.	Regular supervision maintained	☐	☐	☐	☐
15.	Safe housekeeping, welding, rigging, and scaffolding practices observed practices observed	☐	☐	☐	☐

XVIII. CONCRETE CONSTRUCTION

1.	Forms properly installed and braced	☐	☐	☐	☐
2.	Adequate shoring used, plumbed and cross-braced	☐	☐	☐	☐
3.	Shoring remains in place until strength is attained	☐	☐	☐	☐
4.	Proper curing period and procedures observed	☐	☐	☐	☐
5.	Heating devices checked, necessary permits obtained	☐	☐	☐	☐
6.	Mixing and transport equipment supported and traffic planned and	☐	☐	☐	☐
7.	Adequate runways, walkways guarded, etc.	☐	☐	☐	☐
8.	Employees wear full clothing, serviceable shoes, long-sleeve shirts	☐	☐	☐	☐
9.	Hard hats, gloves, boots, plus goggles and respirators provided for protection from cement dust	☐	☐	☐	☐
10.	Protruding nails and stripped form material removed from area	☐	☐	☐	☐
11.	Good housekeeping and safe hoisting and scaffolding practices observed	☐	☐	☐	☐

XIX. STEEL ERECTION

1.	Safety nets used, if required	☐	☐	☐	☐
2.	Hard hats, eye protection, safety belts, serviceable shoes, gloves, and full clothing used	☐	☐	☐	☐
3.	Tag lines used for hoisting tools and material	☐	☐	☐	☐
4.	Fire hazards checked at rivet force and welding operations	☐	☐	☐	☐
5.	Ladders, stairs, or other safe access provided	☐	☐	☐	☐
6.	Hoisting apparatus checked	☐	☐	☐	☐
7.	Good housekeeping, welding, and rigging practices observed	☐	☐	☐	☐

XX. MASONRY WORK

1.	Proper scaffolding erected	☐	☐	☐	☐
2.	Masonry saws properly equipped	☐	☐	☐	☐
3.	Hard hats, eye and face protection, and dust respirators provided	☐	☐	☐	☐
4.	Good housekeeping and rigging practices observed	☐	☐	☐	☐

XXI. EXCAVATION, SHORING, AND TRENCHING

1.	Prior installation, gas lines, conduit, etc., located	☐	☐	☐	☐
2.	Atmospheric conditions tested where necessary; OSHA required "competent person" evaluates soil, excavation conditions, atmosphere when necessary	☐	☐	☐	☐
3.	Adjacent structures shored	☐	☐	☐	☐
4.	Land shored and sheathed as needed for soil and depth	☐	☐	☐	☐
5.	Roads and sidewalks supported and protected	☐	☐	☐	☐
6.	Banks more than 5 feet shored or sloped to angle or repose	☐	☐	☐	☐
7.	Adequate barriers and lighting provided at night where required	☐	☐	☐	☐
8.	Materials at least 2 feet away from edge of excavations	☐	☐	☐	☐
9.	Equipment at safe distance from edge	☐	☐	☐	☐
10.	Water controlled	☐	☐	☐	☐
11.	Ladders or stairs provided as required (trenches 4 feet deep or greater require ladder for every 25 feet of lateral travel)	☐	☐	☐	☐
12.	Equipment ramps adequate, slope not too steep	☐	☐	☐	☐
13.	Frequent inspections made	☐	☐	☐	☐
14.	Full clothing, serviceable shoes and hard hats, goggles, gloves, respirators, boots provided as needed	☐	☐	☐	☐

XXII. FLAMMABLE AND COMBUSTIBLE LIQUIDS

1.	All containers clearly marked to show contents (gas cylinders, cans, drums, fuel tanks, etc.)	☐	☐	☐	☐
2.	Proper storage practices observed:				
	a. Storage areas enclosed or protected from heat and mobile equipment exposure	☐	☐	☐	☐
	b. Fire hazards checked	☐	☐	☐	☐

c.	Sufficient fire extinguishers	☐	☐	☐	☐
d.	UL approved safety cans for 1 to 5 gallons of flammable liquids	☐	☐	☐	☐
e.	Approved cabinet for indoor storage of liquids in excess of 25-gallons, but not more than 120-gallon storage	☐	☐	☐	☐
f.	Sign labeled "Flammable - Keep Fire Away" posted on cabinet	☐	☐	☐	☐
3.	Drums and tanks used for outdoor dispensing and fueling purposes:				
a.	Located 25 feet from buildings and work areas	☐	☐	☐	☐
b.	Bonded, grounded, and equipped with self-venting bungs and self-closing faucets	☐	☐	☐	☐
c.	Identified and restricted from smoking or other heat sources; "No Smoking" sings posted	☐	☐	☐	☐
d.	Diked and drainage provided for spills	☐	☐	☐	☐
e.	Protected from traffic and kept free of weeds, debris, etc.	☐	☐	☐	☐
f.	Engines of vehicles and other combustion equipment shut off when when being fueled.	☐	☐	☐	☐

XXIII. FLAMMABLE GAS (Oxygen/Acetylene)

1.	Cylinders:				
a.	Away from heat	☐	☐	☐	☐
b.	Stored upright (secured)	☐	☐	☐	☐
c.	Valves closed on empty cylinders	☐	☐	☐	☐
d.	Valve protection caps in place if cylinder not in use	☐	☐	☐	☐
e.	Valve key wrench available	☐	☐	☐	☐
f.	Portable rack with bottles secured	☐	☐	☐	☐
g.	Instruct project staff to never drag or slide bottles	☐	☐	☐	☐
h.	Designated storage area	☐	☐	☐	☐
i.	"No Smoking" signs posted	☐	☐	☐	☐
j.	Oxygen bottles stored 20' from acetylene bottles or 1/2-hour fire barrier installed between them	☐	☐	☐	☐
2.	Gauges/valves/hoses:	☐	☐	☐	☐
a.	Good condition	☐	☐	☐	☐

	b. Fire arresters installed (both hoses)	☐	☐	☐	
3.	Eye protection available	☐	☐	☐	☐
4.	Ventilation adequate	☐	☐	☐	☐
5.	When in use, gas lines properly located to prevent tripping and falling	☐	☐	☐	☐
6.	All burning torches bled and free of oxygen and acetylene and/or other gases during lunch breaks and other extended periods of time	☐	☐	☐	☐
XXIV.	**WELDING OPERATIONS**				
1.	Performed by qualified personnel	☐	☐	☐	☐
2.	Screens, shields, or eye protection provided and used to protect employees from welding operation	☐	☐	☐	☐
3.	Employees wear sufficient clothing and PPE	☐	☐	☐	☐
4.	Equipment checked before use and in operative conditions	☐	☐	☐	☐
5.	Electrical equipment grounded	☐	☐	☐	☐
6.	Power cables protected and in good repair	☐	☐	☐	☐
7.	Power cables properly located to prevent tripping and falling hazards	☐	☐	☐	
8.	Dry chemical fire extinguisher within 30 feet	☐	☐	☐	☐
9.	Exposed combustible materials removed to safe location or properly protected from sparks and slag	☐	☐	☐	☐
10.	Valid hot work permit required or provided	☐	☐	☐	☐
11.	Overhead protection provided where required	☐	☐	☐	☐
12.	"Danger - No Smoking, Matches or Open Lights" signs posted when required	☐	☐	☐	☐
13.	Adequate lighting and ventilation provided	☐	☐	☐	☐
14.	Machines turned off at end of shift or when not in use for extended periods	☐	☐	☐	☐
XXV.	**HOISTS**				
1.	Material hoists:				
	a. Designed by licensed professional engineer	☐	☐	☐	☐
	b. With tower enclosed for full height on all sides with 1/2-inch by 18--inch Gauge screen mesh, except for landing for landing access	☐	☐	☐	☐
	c. With tower not enclosed, hoist platform or car shall be totally enclosed on all sides for the full height between floor and overhead covering with 1/2-inch x 14-inch gauge mesh	☐	☐	☐	

d.	Operation rules poster "No Riders Allowed" posted	☐	☐	☐	☐
e.	Hoisting entrances guarded by substantial gate or bars	☐	☐	☐	☐
f.	Vertical gates of sufficient height to prevent anyone from looking over them into shaft	☐	☐	☐	☐
g.	Competent person assigned to inspect daily	☐	☐	☐	☐
h.	Weekly inspections logged	☐	☐	☐	☐
I.	Annual inspection available	☐	☐	☐	☐
j.	Fire extinguisher in place and inspected	☐	☐	☐	☐
k.	Load chart posted	☐	☐	☐	☐

XXVI. BLASTING
XXVII. HAZARDOUS WASTE

Certification and Training of Subcontractor Personnel

1.	Medical exam within last 12 months	☐	☐	☐	☐
2.	40-hour initial training, 3 days supervised field activities, 8-hour Annual refresher	☐	☐	☐	☐
3.	First aid and CPR certification	☐	☐	☐	☐
4.	Quantitatively fit tested (preferred method per NIOSH Publication 87-116, (Appendix B.3)	☐	☐	☐	☐
5.	Attend pre-entry safety meeting	☐	☐	☐	☐

Site Safety Documentation

1.	Site health and safety plan (HSP) prepared and approved	☐	☐	☐	☐
2.	HSP onsite	☐	☐	☐	☐
3.	All personnel onsite identified in HSP	☐	☐	☐	☐
4.	Documentation of safety briefing	☐	☐	☐	☐
5.	Hospital map posted	☐	☐	☐	☐
6.	Phone numbers posted	☐	☐	☐	☐
7.	Emergency vehicle identified	☐	☐	☐	☐
8.	Material Safety Data Sheets (MSDSs) onsite	☐	☐	☐	☐

9.	Work zones delineated (How? _____)	☐	☐	☐	☐
10.	Wind direction flags in use	☐	☐	☐	☐
11.	Documentation of calibration of monitoring equipment in Clean environment	☐	☐	☐	☐
12.	Monitoring conducted and recorded as specified in HSP (Frequency? _____)	☐	☐	☐	☐
13.	Monitoring for heat/cold stress	☐	☐	☐	☐
14.	Buddy system in use	☐	☐	☐	☐
15.	Decontamination procedures established as specified in HSP	☐	☐	☐	☐
16.	No eating, drinking, or smoking in exclusion and contamination Reduction zones	☐	☐	☐	☐
17.	Toilet facilities provided	☐	☐	☐	☐
18.	No contact lenses	☐	☐	☐	☐
19.	Work conducted during daylight hours only	☐	☐	☐	☐
Safety Briefing					
1.	All personnel attended (including new personnel)	☐	☐	☐	☐
2.	Documentation of meetings	☐	☐	☐	☐
3.	Chemical hazards and toxicology reviewed	☐	☐	☐	☐
4.	Physical hazards reviewed	☐	☐	☐	☐
5.	Biological hazards reviewed	☐	☐	☐	☐
6.	Heat/cold stress information reviewed	☐	☐	☐	☐
7.	Air monitoring requirements	☐	☐	☐	☐
8.	Levels of protection reviewed	☐	☐	☐	☐
9.	Work zones reviewed	☐	☐	☐	☐
10.	Decontamination procedures reviewed	☐	☐	☐	☐
11.	Emergency response procedures reviewed	☐	☐	☐	☐
12.	Site communications	☐	☐	☐	☐

Personal Protective Equipment (PPE)

1.	Levels of protection being worn as specified in HSP	☐	☐	☐	☐
2.	All appropriate PPE available onsite	☐	☐	☐	☐
3.	Hard hats being worn	☐	☐	☐	☐
4.	Appropriate hand protection being used (What? _____)	☐	☐	☐	☐
5.	Appropriate body protection being used (What? _____)	☐	☐	☐	☐
6.	Appropriate eye protection being used (What? _____)	☐	☐	☐	☐
7.	Appropriate ear protection being used	☐	☐	☐	☐
8.	Appropriate respirator protection being used	☐	☐	☐	☐
9.	Respirators donned correctly	☐	☐	☐	☐
10.	If PPE is not onsite, prepared to halt work	☐	☐	☐	☐
11.	Disposal methods in place for disposable PPE	☐	☐	☐	☐

Decontamination Procedures

1.	Decontamination procedure established as specified in the HSP	☐	☐	☐	☐
2.	Decontamination zone clearly defined	☐	☐	☐	☐
3.	PPE properly decontaminated (How? _____)	☐	☐	☐	☐
4.	Sampling equipment properly decontaminated (How? _____)	☐	☐	☐	☐
5.	Monitoring equipment properly decontaminated (How? _____)	☐	☐	☐	☐
6.	Heavy equipment properly decontaminated (How? _____)	☐	☐	☐	☐
7.	Samples properly decontaminated (How? _____)	☐	☐	☐	☐
8.	Decontamination fluids appropriately disposed of	☐	☐	☐	☐

XXVIII. CONSTRUCTION INSPECTIONS

1. Are the following inspected frequently:

a.	Jobsite	☐	☐	☐	☐
b.	Materials	☐	☐	☐	☐
c.	Equipment	☐	☐	☐	☐
2.	Are first aid kits inspected before being sent to a jobsite and weekly thereafter?	☐	☐	☐	☐
3.	When noise levels are suspected to exceed 85 db(A) is noise monitoring conducted?	☐	☐	☐	☐
4.	When exposure limits for gases, vapors, fumes, and/or mists might be exceeded, is monitoring conducted?	☐	☐	☐	☐
6.	When onsite, are respirators inspected regularly?	☐	☐	☐	☐
7.	When working near or over water, are buoyant work vests and preservers inspected regularly?	☐	☐	☐	☐
8.	Is all fire fighting equipment, including portable fire extinguishers periodically inspected?	☐	☐	☐	☐
9.	Are cranes and derricks inspected by a competent person prior to each use and during use?	☐	☐	☐	☐
10.	Is hoisting machinery for cranes and derricks inspected annually?	☐	☐	☐	☐
11.	Are hoists inspected and tested at not more than 3-month intervals?	☐	☐	☐	☐
12.	Are excavation inspected by a competent person after every rainstorm or Hazard-increasing occurrence?	☐	☐	☐	☐
13.	Are excavations inspected daily by a competent person?	☐	☐	☐	☐
14.	Are ladders inspected periodically and after any occurrence which could Affect their safety?	☐	☐	☐	☐

XXIX. OFFICE TRAILERS/BUILDINGS

Employer Posting

1.	Is the OSHA (or state) job safety poster displayed in a prominent location where all employees are likely to see it?	☐	☐	☐	☐
2.	Are emergency telephone numbers posted where they can be readily found in case of emergency?	☐	☐	☐	☐
3.	Where employees may be exposed to any toxic substances or harmful physical agents, has appropriate information concerning employee access to medical and exposure records and Material Safety Data Sheets been posted or otherwise made readily available to affected employees?	☐	☐	☐	☐
4.	Are signs concerning exiting from buildings, room capacities, floor loading, exposures to x-ray, microwave, or other harmful radiation or substances posted where appropriate?	☐	☐	☐	☐

5.	Are other required posters properly displayed, such as:				
	a. Industrial Welfare Commission orders regulating wages, hours, and working conditions?	☐	☐	☐	☐
	b. Discrimination in employment prohibited by law?	☐	☐	☐	☐
	c. Notice to employees of unemployment and disability insurance.	☐	☐	☐	☐
	d. Payday notice?	☐	☐	☐	☐
Emergency Action Plan					
1.	Are alarm systems properly maintained and tested regularly?	☐	☐	☐	☐
2.	Is the emergency action plan reviewed and revised periodically?	☐	☐	☐	☐
3	Do employees know their responsibilities:	☐	☐	☐	☐
	a. For reporting emergencies?	☐	☐	☐	☐
	b. During an emergency?	☐	☐	☐	☐
	c. For conducting rescue and medical duties?	☐	☐	☐	☐
Fire Protection					
1.	Is there a current fire prevention plan?	☐	☐	☐	☐
2.	Does the plan describe the type of fire protection equipment and/or	☐	☐	☐	☐
3.	Are practices and procedures established to control potential fire hazards and ignition sources?	☐	☐	☐	☐
4.	Is local fire department well acquainted with facilities, location, and specific hazards?	☐	☐	☐	☐
5.	Is there a fire alarm system and is it certified as required?	☐	☐	☐	☐
6.	If you have a fire alarm system, is it tested at least annually?	☐	☐	☐	☐
7.	Are fire doors and shutters in good operating condition?	☐	☐	☐	☐
8.	Are automatic sprinkler system water control valves, air and water pressures checked weekly/periodically as required?	☐	☐	☐	☐
9.	Is maintenance of automatic sprinkler systems assigned to responsible persons or to a sprinkler contractor?	☐	☐	☐	☐
10.	Is an earthquake preparedness kit on site?	☐	☐	☐	☐
Exiting or Egress					
1.	Are all exits marked with an exit sign and illuminated by a reliable light source?	☐	☐	☐	☐
2.	Are the directions to exits, when not immediately apparent, marked with visible signs?	☐	☐	☐	☐
3.	Are doors, passageways, or stairways that are neither exits nor access	☐	☐	☐	☐

to exits and which could be mistaken for exits, appropriately marked "NOT AN EXIT," "TO BASEMENT," "STOREROOM," etc.?

4. Are exit doors side-hinged? ☐ ☐ ☐ ☐
5. Are all exits kept free of obstructions? ☐ ☐ ☐ ☐
6. Are there sufficient exits to permit prompt escape in case of emergency? ☐ ☐ ☐ ☐
7. Are special precautions taken to protect employees during construction and repair operations? ☐ ☐ ☐ ☐
8. Where exiting will be through frameless glass door, glass exit doors, etc., and the doors fully tempered, and do they meet the safety requirements for human impact? ☐ ☐ ☐ ☐

General Work Environment

1. Are all work sites clean and orderly? ☐ ☐ ☐ ☐
2. Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant? ☐ ☐ ☐ ☐
3. Are all spilled materials or liquids cleaned up immediately? ☐ ☐ ☐ ☐
4. Are the minimum number of toilets and washing facilities provided? ☐ ☐ ☐ ☐
5. Are all toilets and washing facilities clean and sanitary? ☐ ☐ ☐ ☐
6. Are all work areas adequately illuminated? ☐ ☐ ☐

Walkways

1. Are aisles and passageways kept clear? ☐ ☐ ☐ ☐
2. Are aisles and walkways marked as appropriate? ☐ ☐ ☐ ☐
3. Are wet surfaces covered with nonslip materials? ☐ ☐ ☐ ☐
4. Are holes in the floor, sidewalk, or other walking surface repaired Properly, covered, or otherwise made safe? ☐ ☐ ☐ ☐

Medical Services And First Aid

1. If medical and first aid facilities are not in proximity to your workplace, is At least one employee on each shift currently qualified to render first aid? ☐ ☐ ☐ ☐
2. Are medical personnel readily available for advice and consultation on Matters of employee health? ☐ ☐ ☐ ☐
3. Are emergency phone numbers posted? ☐ ☐ ☐ ☐
4. Are first aid kits easily accessible to each work area, with necessary Supplies available, periodically inspected, and replenished as needed? ☐ ☐ ☐ ☐
5. Have first aid kit supplies been approved by a physician, indicating they are adequate for a particular area or operation? ☐ ☐ ☐ ☐

Personnel Safe Work Practices (3.1)

1.	Employees have completed stairway and ladder training.	☐	☐	☐	☐
2.	Carrying objects on stairs with both hands is avoided.	☐	☐	☐	☐
3.	Pan and skeleton metal stairs not used until permanent or temporary treads/landings provided.	☐	☐	☐	☐
4.	Ladders periodically inspected for defects by competent person.	☐	☐	☐	☐
5.	Defective ladders tagged and removed from service until repaired.	☐	☐	☐	☐
6.	Ladders used only for purpose for which they were designed.	☐	☐	☐	☐
7.	Ladders not loaded beyond their rated capacity.	☐	☐	☐	☐
8.	Only one person simultaneously climbing or working from an individual ladder.	☐	☐	☐	☐
9.	Personnel face ladder when climbing.	☐	☐	☐	☐
10.	Personnel climbing ladders maintain 3 points of contact with ladder.	☐	☐	☐	☐
11.	Personnel not carrying tools, materials, or equipment while climbing. Tag lines used.	☐	☐	☐	☐
12.	Ladders not moved, shifted or extended while in use.	☐	☐	☐	☐
13.	Stepladders used in open and locked position only.	☐	☐	☐	☐
14.	Stepladders top platform and top step not used as a step.	☐	☐	☐	☐
15.	Stepladders cross-braced not used for climbing.	☐	☐	☐	☐
16.	Fall protection considered when working from ladders over 6'.	☐	☐	☐	☐

XXXII. FALL PROTECTION
XXXIII. EXCAVATIONS

Personnel Safe Work Practices (3.1)

1.	.Competent person has completed daily inspection and has authorized any entry.	☐	☐	☐	☐
2.	Personnel aware of entry requirements established by competent person.	☐	☐	☐	☐
3.	Protective systems are free from damage and in stable condition.	☐	☐	☐	☐
4.	Surface objects/structures secured from falling into excavation.	☐	☐	☐	☐
5.	Potential hazardous atmospheres have been tested and found to be at safe levels.	☐	☐	☐	☐

6. Precautions taken to prevent cave-in from water accumulation in the excavation.	☐	☐	☐	
7. Personnel wearing appropriated PPE, HSP.	☐	☐	☐	☐
General				
8. Daily safety briefing/meeting conducted with personnel.	☐	☐	☐	☐
9. Excavation and protective systems adequately inspected by competent person.	☐	☐	☐	☐
10. Defective protective systems or other unsafe conditions corrected before entry.	☐	☐	☐	☐
11. Guardrails provided on walkways over excavations 6′ or deeper .	☐	☐	☐	☐
12. Barriers provided at excavations 6′ or deeper when not readily visible.	☐	☐	☐	☐
13. Barriers or covers provided for wells, pits, shafts, or similar excavation 6′ or deeper.	☐	☐	☐	☐
14. Excavating equipment operated safely.	☐	☐	☐	☐
Prior to Excavating (3.2.2)				
15. Location of underground utilities and installations identified.	☐	☐	☐	☐
Excavating Activities (3.2.3)				
16. Rocks, trees, and other unstable surface objects removed or supproted.	☐	☐	☐	☐
17. Exposed underground utility lines supported.	☐	☐	☐	
18. Undermined surface structures supported or determined to be in safe condition.	☐	☐	☐	☐
19. Warning system used to remind equipment operators of excavation edge.	☐	☐	☐	☐
Excavation Entry (3.2.4)				
20. Trenches >4′ deep provided with safe means of egress within 25′.	☐	☐	☐	☐
21. Structure ramps designed and approved by competent person.	☐	☐	☐	☐
22. Potential hazardous atmospheres tested prior to entry.	☐	☐	☐	☐
23. Rescue equipment provided where potential for hazardous atmosphere exist.	☐	☐	☐	☐
24. Ventilation used to control hazardous atmospheres and air tested frequently.	☐	☐	☐	☐
25. Appropriate respiratory protection used when ventilation does not control hazards.	☐	☐	☐	☐
26. Precautions taken to prevent cave-in from water accumulation in the excavation.	☐	☐	☐	☐
27. Precautions taken to prevent surface water from entering excavation.	☐	☐	☐	☐
28. Protection provided from falling/rolling material from excavation face.	☐	☐	☐	☐
29. Spoil piles, equipment, materials restrained or kept at least 2′ from	☐	☐	☐	☐

excavation edge.

Excavtion Protective Systems (3.2.5)

30. Protective systems used for excavations 5′ or deeper. ☐ ☐ ☐ ☐
31. Protective systems for excavations deeper than 20′ designed by Professional Engineer and signed off. ☐ ☐ ☐ ☐
32. If soil unclassified, maximum allowable slope is 34^0. ☐ ☐ ☐ ☐
33. Protective systems free from damage. ☐ ☐ ☐ ☐
34. Protective systems used according to manufacturers recommendations and not subject to loads exceeding design limits. ☐ ☐ ☐ ☐
35. Protective system components securely connected to prevent movement or failure. ☐ ☐ ☐ ☐
36. Cave-in protection provided while entering/exiting shielding system. ☐ ☐ ☐ ☐
37. Personnel removed from shielding systems when installed, removed, or vertical movement. ☐ ☐ ☐ ☐

Protective System Removal (3.2.6)

38. Protective system removal starts and progresses from excavation bottom. ☐ ☐ ☐ ☐
39. Protective systems removed slowly and cautiously. ☐ ☐ ☐ ☐
40. Temporary structure supports used if failure of remaining components observed. ☐ ☐ ☐ ☐
41. Back-filling taking place immediately after protective system removal. ☐ ☐ ☐ ☐

XXXIV. DRILLING
XXXV. EARTHMOVING EQUIPMENT

Personnel Safe Work Practices (3.1)

1. Only authorized personnel operating earthmoving equipment. ☐ ☐ ☐ ☐
2. Personnel maintaining safe distance from operating equipment. ☐ ☐ ☐ ☐
3. Personnel and equipment operator in close communication when personnel must be in proximity of earthmoving equipment. ☐ ☐ ☐ ☐
4. Personnel approach operating equipment safely. ☐ ☐ ☐ ☐
5. Personnel wearing high-visibility and/or reflective vests when close to operating equipment. ☐ ☐ ☐ ☐
6. Personnel riding only in seats of equipment cab and using seat belts. ☐ ☐ ☐ ☐
7. Personnel not positioned under hoisted loads. ☐ ☐ ☐ ☐

General (3.2.1)

8. Daily safety briefing/meeting conducted with crew. ☐ ☐ ☐ ☐
9. Daily inspection of equipment and equipment accessories conducted ☐ ☐ ☐ ☐

before use.				
10. At least one fire extinguisher available at the equipment operating area.	☐	☐	☐	☐
Earthmoving Equuipment Compponents (3.2.2)				
14. Backup alarm or spotter used when backing equipment.	☐	☐	☐	☐
15. Operational horn provided on bi-directional equipment.	☐	☐	☐	☐
16. Seat belts are provided and used.	☐	☐	☐	☐
17. Rollover protective structures (ROPS) provided.	☐	☐	☐	☐
18. Braking system capable of stopping full payload.	☐	☐	☐	☐
19. Headlights and taillights operable when additional lights required.	☐	☐	☐	☐
20. Brake lights in operable condition.	☐	☐	☐	☐
21. Cab glass provides no visible distortion to operator.	☐	☐	☐	☐
22. Hauling equipment (dump trucks) provided with cab shield or canopy.	☐	☐	☐	☐
23. Dump truck beds provided with positive means of support during maintenance or inspection.	☐	☐	☐	☐
24. Dump truck operating levers provided with latch to prevent accidental dumping.	☐	☐	☐	☐
Earthmoving Equipment Placement (3.2.3)				
25. Location of underground utilities identified.	☐	☐	☐	☐
26. Safe clearance distance maintained while working under overhead lines.	☐	☐	☐	☐
27. Safe distance is maintained while traveling under powerlines.	☐	☐	☐	☐
28. Unattended equipment visibly marked at night.	☐	☐	☐	☐
29. Parking brake set when equipment parked and equipment chocked when parked on incline.	☐	☐	☐	☐
Earthmoving Equipment Operation (3.2.4)				
30. Equipment operated on safe roadways and grades.	☐	☐	☐	☐
31. Equipment operated at safe speed.	☐	☐	☐	☐
32. Equipment not operated during inclement weather, lightning storms.	☐	☐	☐	☐
33. Using equipment to lift loads, other than earth, done according to equipment manufacturer specifications.	☐	☐	☐	☐
34. Lifting and hauling capacities are not exceeded.	☐	☐	☐	☐
35. Equipment components lowered when not in use.	☐	☐	☐	☐

36. All machine guards are in place.	☐	☐	☐	☐
37. Air monitoring conducted per HSP for hazardous atmospheres.	☐	☐	☐	☐
Earthmoving Equipment Maintenance (3.2.5)				
38. Defective components repaired immediately.	☐	☐	☐	☐
39. Suspended equipment or equipment parts are supported prior to work under or between.	☐	☐	☐	☐
40. Lockout/tagout procedures used prior to maintenance.	☐	☐	☐	☐
41. Tires on split rims removed using tire safety rack or cage.	☐	☐	☐	☐
42. Good housekeeping maintained on and around equipment.	☐	☐	☐	☐
Excavating at Hazardous Waste Sites (3.2.6)				
43. Waste disposal according to waste plan and HSP	☐	☐	☐	☐
44. Appropriate decontamination procedures followed, per HSP.	☐	☐	☐	

XXXVI. DEMOLITION

PERSONNEL SAFE WORK PRACTICES (3.1)				
1. Personnel remain safe distance from demolition zone (DZ) during work.	☐	☐	☐	☐
2. Personnel entering DZ, only when necessary.	☐	☐	☐	☐
3. Prior to DZ entry, competent person evaluates structure and authorizes Entry.	☐	☐	☐	☐
4. Personnel aware of entry requirements established by competent person.	☐	☐	☐	☐
5. Competent person escorts personnel during DZ entry, if possible.	☐	☐	☐	☐
6. Personnel removed from DZ prior to activities that could affect structural integrity or safety.	☐	☐	☐	☐
7. Personnel not positioned under hoisted loads.	☐	☐	☐	☐
8. Personnel wearing appropriated PPE per HSP.	☐	☐	☐	☐
PERSONNEL ACTIVITIES (3.2)				
9. Demolition permit completed and submitted, as required.	☐	☐	☐	☐
10. Competent person completed engineering survey, available at site.	☐	☐	☐	☐
11. Regulated hazardous substances removed prior to demolition.	☐	☐	☐	☐
12. Hazardous materials purged from tanks, pipes, and equipment.	☐	☐	☐	☐
13. Utility service lines shut off, capped, or otherwise controlled, utilities	☐	☐	☐	☐

notified.

14. Utilities needed for demolition temporary relocated.	☐	☐	☐	☐
GENERAL (3.2.1)				
15. Daily safety briefing/meeting conducted with crew.	☐	☐	☐	☐
16. Daily inspection of demolition equipment conducted before use.	☐	☐	☐	☐
17. Competent person inspecting DZ for hazards as work progresses.	☐	☐	☐	☐
18. Competent person controls entry into DZ, unauthorized entry prohibited.	☐	☐	☐	☐
19. Multi-story structures provided with adequate canopy over entrances.	☐	☐	☐	☐
20. Demolition starts at top of structure and proceeds downward.	☐	☐	☐	☐
21. Fire extinguisher available at demolition area.	☐	☐	☐	☐
PROTECTION OF THE PUBLIC (3.2.2)				
22. Demo work not performed in area occupied by public, unless permitted By contract.	☐	☐	☐	☐
23. Overhead protection provided for pedestrian traveled sidewalks.	☐	☐	☐	☐
24. Walking surfaces kept free of obstructions.	☐	☐	☐	☐
25. Standard guardrails provided on pedestrian bridges, ramps, runways, and platforms.	☐	☐	☐	☐
26. Signs posted informing pedestrians of hazards.	☐	☐	☐	☐
27. Temporary fence provided around perimeter of DZ adjacent to public areas.	☐	☐	☐	☐
28. Watch placed at openings when DZ barricades temporarily removed.	☐	☐	☐	☐
29. Warning lights provided around DZ hazards at night, walkways lighted.	☐	☐	☐	☐
WORK AREA PROTECTION (3.2.3)				
30. Wall openings protected by guardrail 42" high.	☐	☐	☐	☐
31. Fall protection provided for fall hazards 6' or greater.	☐	☐	☐	☐
32. Adequate barricades and signs provided when debris dropped through floor openings.	☐	☐	☐	☐
33. Floor opening, not used as material drops, adequately covered.	☐	☐	☐	☐
34. Signs, barricades, flagging used to warn personnel of hidden hazards.	☐	☐	☐	☐
35. Glass removed from structure, or personnel protected from fragments.	☐	☐	☐	☐
36. Damaged structure's walls and floors shored and braced.	☐	☐	☐	☐
37. All DZ accessways not meant to be accessed closed at all times.	☐	☐	☐	☐

38. Multi-story structure stairways adequately covered and illuminated.	☐	☐	☐	☐
39. DZ areas adequately illuminated.	☐	☐	☐	☐
40. Protruding reinforcing steel protected when personnel work above it.	☐	☐	☐	☐
MANUAL REMOVAL OF WALLS AND MASONRY (3.2.4)				
41. Walls not permitted to fall on floors exceeding their carrying capacity.	☐	☐	☐	☐
42. Wall greater than one story not free standing unless originally designed to stand alone.	☐	☐	☐	☐
43. Personnel not working on walls during inclement weather.	☐	☐	☐	☐
44. Load-supporting members not cut until above floors demolished and removed.	☐	☐	☐	☐
45. Floor openings within 10′ of walls are planked unless personnel removed from below.	☐	☐	☐	☐
46. Masonry debris removed from steel left in place as masonry demo progresses.	☐	☐	☐	☐
47. Walkways/ladders provided to safely reach scaffolds and walls.	☐	☐	☐	☐
48. Retaining walls removed only after supported material removed/secured	☐	☐	☐	☐
MANUAL REMOVAL OF FLOORS (3.2.5)				
49. Debris removed from floor arches prior to demolition.	☐	☐	☐	☐
50. Plank walkways 18″ or greater provided for access across demolished floors.	☐	☐	☐	☐
51. Planks overlap 1′ and laid over solid bearings.	☐	☐	☐	☐
52. Areas under floor arch demolition barricaded and personnel removed.	☐	☐	☐	☐
DEMOLITION USING HEAVY EQUIPMENT OR CRANES (3.2.6)				
53. Personnel removed from DZ during use of mechanical equipment.	☐	☐	☐	☐
54. Mechanical equipment positioned of floors capable of supporting Imposed loads.	☐	☐	☐	☐
55. Working surface edges provided with curbs or stop-logs.	☐	☐	☐	☐
56. Heavy equipment operated safely .	☐	☐	☐	☐
57. Roof stonework and steel members cut free prior to wall demolition.	☐	☐	☐	☐
58. Demo ball weight appropriate for crane's rated load and line strength.	☐	☐	☐	☐
59. Crane boom and loadline is as short as possible.	☐	☐	☐	☐
60. Demo ball securely attached to loadline with swivel-type connection.	☐	☐	☐	☐

61. Cranes operated safely. ☐ ☐ ☐ ☐

MATERIAL CHUTES (3.2.7)

62. Materials not dropped outside exterior walls unless area protected. ☐ ☐ ☐ ☐
63. Chutes designed/constructed to withstand impact loads of debris. ☐ ☐ ☐ ☐
64. Chutes entirely enclosed except of insertion points, openings closed when not in use. ☐ ☐ ☐ ☐
65. Gate provided at chute discharge, competent employee controls gate. ☐ ☐ ☐ ☐
66. Signs and barricades installed around chute discharge. ☐ ☐ ☐ ☐
67. Chute openings protected by guardrail where personnel stand to dump. ☐ ☐ ☐ ☐
68. Toeboard provided in front of chute openings when mechanical equipment used to dump. ☐ ☐ ☐ ☐
69. Personnel not entering chute to remove items. ☐ ☐ ☐ ☐

DEBRIS STORAGE (3.2.8)

70. Debris does not exceed allowable floor loads ☐ ☐ ☐ ☐
71. Wood floor structures, only one floor above grade removed for debris storage space. ☐ ☐ ☐ ☐
72. Wood floor beams supporting walls left in place or equivalent support provided. ☐ ☐ ☐ ☐
73. Floor arches not removed 25' above grade for debris storage. ☐ ☐ ☐ ☐
74. Storage spaces blocked off except when material is being removed. ☐ ☐ ☐ ☐

HOUSEKEEPING (3.2.9)

75. Work areas, passageways, stairs, ladders, and exits kept free of debris. ☐ ☐ ☐ ☐
76. Demolition materials, tools, and equipment placed in an orderly manner. ☐ ☐ ☐ ☐
77. Receptacles provided for disposal of miscellaneous trash. ☐ ☐ ☐ ☐
78. Air, water, electrical, and welding lines positioned to eliminate tripping hazards. ☐ ☐ ☐ ☐
79. Burning debris done according to local requirements. ☐ ☐ ☐ ☐
80. Fires completely extinguished at least 1 hour before end of day's work. ☐ ☐ ☐ ☐

Submittal Register

Contract Number: N62467-98-D-0995			CTO No.: 0036		CTO Title: Fleet Training Center Detention Pond Demolition and Replacement						Location: NS Mayport, Mayport, Florida				Contractor: CH2M HILL Constructors, Inc./J.A. Jones Environmental Services Company		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item No.	Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI/JAJ Review Date	CCI/JAJ Disposition	CCI/JAJ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
	DIV 1	**General Paragraphs**															
		SD-02,															
1	01010	A CPM Schedule	1.2.1.1.a.	NTR			Monthly										
		SD-09, Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	01010	A Work Plan	1.2.1.1	NTR													
3	01010	B Narrative	1.2.1.1.a	NTR													
4	01010	C Technical Specifications	1.2.1.1.b	NTR													
5	01010	D Manufacturer's Catalog Data	1.2.1.1.c	NTR													
6	01010	E Health and Safety Plan	1.2.1.1.d	NTR													
7	01010	F QA/QC Plan	1.2.1.1.e	NTR													
8	01010	G Sampling and Analysis Plan	1.2.1.1.f	NTR													
9	01010	H Decontamination Procedures	1.2.1.1.g	NTR													
10	01010	I Material Safety Data Sheets	1.2.1.1.h	NTR													
1A	01010	m Dewatering Plan	1.3.1.g	NTR													
		SD-18, Records	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11	01010	A As Built Records	1.3.1.1	ROICC													
12	01010	B Environmental Conditions Report	1.3.1.2	ROICC													
13	01010	C Test Results Summary Report	1.3.1.3	ROICC			Monthly										
14	01010	D Daily Production Report	1.3.1.4	ROICC			Daily										
15	01010	E Daily QC Report	1.3.1.5	ROICC			Daily										
16	01010	F Rework Items List	1.3.1.6	ROICC			Monthly										
17	01010	G Permits	1.3.1.7	ROICC			As Required										
18	01010	H Const. Documentation Report	1.3.1.8	ROICC													
19	01010	I List of Contractor Personnel	1.3.1.9	ROICC													
	DIV 1	**Waste Sampling Requirements**															
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20	01430	A FL CompQAP No.	1.1.1.1	ROICC													
21	01430	B Sample Log	1.1.1.2	ROICC													
22	01430	C Chain of Custody	1.1.1.3	ROICC													
		SD-12, Field Test Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23	01430	A Disposal Sample Analytical Results	1.1.2.1	ROICC													
24	01430	B Screening Sample Results	1.1.2.2	ROICC													
25	01430	C Influent/Effluent Sample Analytical Results	1.1.2.3	ROICC													
26	01430	D Electronic Copy of All Analytical Results	--	ROICC													
		SD-13, Certification	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01430	A Laboratory	1.4.2	ROICC													

Submittal Register

Contract Number: N62467-98-D-0995			CTO No.: 0036		CTO Title: Fleet Training Center Detention Pond Demolition and Replacement						Location: NS Mayport, Mayport, Florida				Contractor: CH2M HILL Constructors, Inc./J.A. Jones Environmental Services Company		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item No.	Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI/JAJ Review Date	CCI/JAJ Disposition	CCI/JAJ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
		Certification															
	DIV 2	**General Excavation, Filling, and Backfilling**															
		SD-02, Manufacturer's Catalog Data	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28	02220	A Fill Materials	1.2.1a	ROICC													
29	02220	B Grass Seed	1.2.1.b	ROICC													
		SD-03, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30	02220	A Utility Location Verification	--	ROICC													
		SD-12, Field Test Reports	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31	02220	A Backfill Compaction Tests	3.4	ROICC													
	DIV 2	**Transportation and Disposal of Contaminated Material**															
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
32	02223	A Treatment Facility Permit	1.1.1.1	ROICC													
		SD-18, Records	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
33	02223	A Shipment Manifests	1.1.2.1	ROICC													
34	02223	B Delivery Certificates	1.1.2.2	ROICC													
35	02223	C Disposal Site Decontamination Certificate	3.3.c	ROICC													
36	02223	D Treatment and Disposal Certificate	1.1.2.3	ROICC													
37	02223	E Truck Weight Tickets	1.1.2.1	ROICC													
	DIV 2	**Pavement Removal and Replacement**															
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
39	02571	A Paving Materials	--	ROICC													
	DIV 3	**Reinforced Concrete**															
		SD-02, Manufacturer's Catalog Data	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
40	03301	A Concrete Curing Compound	1.3.1.a	ROICC													
41	03301	B PVC Waterstop	1.3.1.b	ROICC													
42	03301	C Hydrophilic Waterstop Data	1.3.1.c	ROICC													
		SD-08, Statements	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
43	03301	A Concrete Mix Design	1.2.2.a	ROICC													
44	03301	B Reinforcement	1.2.2.b	ROICC													
	03301	C Curing Compound Data	1.2.2.c	ROICC													

Submittal Register

Contract Number: N62467-98-D-0995	CTO No.: 0036	CTO Title: Fleet Training Center Detention Pond Demolition and Replacement	Location: NS Mayport, Mayport, Florida	Contractor: CH2M HILL Constructors, Inc./J.A. Jones Environmental Services Company

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item No.	Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI/JAJ Review Date	CCI/JAJ Disposition	CCI/JAJ Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
	DIV 3	**Reinforced Concrete (Cont.)**															
		SD-12, Field Test Reports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
45	03301	A Slump Test	3.10.3.a	ROICC													
46	03301	B Air Content	3.10.3.b	ROICC													
47	03301	C Compressive Strengths Test	3.10.3.c	ROICC													
48	03301	D Post-Construction Leak Test	3.10.3.d	ROICC													
49	03301	E Ready-Mix Delivery Tickets	2.1.1	ROICC													

Testing Plan and Log

Contract Number: N62467-98-D-0995		**CTO No.:** 0036		**CTO Title:** Fleet Training Center Detention Pond Demolition and Replacement				**Location:** NS Mayport, Mayport, FL		
A	B	C	D	E	F	G	H	I	J	K
Spec Section and Paragraph	**Test Required**	**Proposed Lab**	**Sampled By**	**Tested By**	**Test Location**	**Frequency**	**Date Test Made**	**Test Results**	**Date Results Forwarded**	**Remarks**
SAP	Waste Characterization									Frequency and Analyses Specified in SAP
SAP	Groundwater Level Measurements									Frequency Specified in SAP
SAP	Soil Screening									OVA/FID as necessary
SAP	Pond Influent/Effluent Sampling					2				One for Influent and One for Effluent
02220, 3.4	Common Fill Compaction Testing									Every 200 linear feet
02220, 3.4 02571, 3.2.2	Pavement Subgrade Compaction Testing									Every 200 linear feet
02220, 3.3 - 3.4	Concrete Subgrade Compaction Testing					2				Treatment System Compound
03301, 3.10.3.a	Concrete Slump Test					See Remarks				Every 10 CY or per batch
03301, 3.10.3.b	Concrete Air Entrainment Test					5				
03301, 3.10.3.c	Concrete Compressive Strength Test					5				
03301, 3.10.3.d	Post Construction Leak Testing									

Testing Plan and Log

Contract Number: N62467-98-D-0995		CTO No.: 0036		CTO Title: Fleet Training Center Detention Pond Demolition and Replacement				Location: NS Mayport, Mayport, FL		
A	B	C	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Proposed Lab	Sampled By	Tested By	Test Location	Frequency	Date Test Made	Test Results	Date Results Forwarded	Remarks

CCI NAVY RAC
CH2MHill Constructors Inc.
115 Perimeter Center Place, NE
Suite 700
Atlanta, GA 30346-1278
TEL 770.604.9182
FAX 770.604.9282

March 31, 2000

Mr. Michael Halil
J.A. Jones Environmental Services Company
8936 Western Way, Suite 10
Jacksonville, Florida 32256

Subject: Contract No. N62467-98-D-0995
Contract Task Order 0036 – NS Mayport – Mayport, Florida
Figure 6-2, Project Quality Control Manager Letter of Authority

Dear Mr. Halil:

Herein describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager on the NS Mayport site, Contract Task Order 0036 under the Navy RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the QC Program Manager in continued implementation and enforcement of the Project QC Plans. You are responsible for implementing the QC program as described in the Navy RAC contract. You are responsible for managing the site-specific QC requirements in accordance with the Project QC Plans. You are required to attend the coordination and mutual understanding meeting, conduct QC meetings, perform the three phases of control, perform submittal review, perform submittal approval, ensure testing is performed, and prepare QC certifications and documentation required in the Navy RAC Contract.

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved.

You have the authority to direct the correction of non-conforming work.

Sincerely,

CH2M HILL Constructors, Inc.

RESUME OF PROJECT QUALITY CONTROL MANAGER

Solicitation Number:	N62470-97-R-5000
Name: MICHAEL HALIL, E. I.	**Current Job Title:** QC Manager
Current Office Location:	Jacksonville, FL
Title/Position:	**QC Manager**
Years Experience with Proposing Firm:	2.5
Years Experience with Other Firms:	2.5

Education (Degree, College/University, Specialization):
BS, University of Florida-1996, Environmental Engineering

Active Registration (Year First Registered & Discipline)	**Health and Safety Training (Courses and Dates)**
1997, E.I.T. No. 1096ET218	40 Hr. OSHA 29 CFR 1910.120, 1997
State Registered: FL	

Experience and Qualifications:

Time Period:	**Employer:**	**Position Held:**
1997 - Present	J.A. Jones Environmental Services Company	Project Engineer
1993	Environmental Technologies and Assessments	Field Technician

Description of Duties, Responsibilities, and Major Projects

Mr. Halil provides 6.5 years of related civil and environmental engineering education and environmental assessment and remediation experience. Mr. Halil has experience assisting clients with environmental compliance issues under CERCLA, RCRA, TSCA, CWA, CAA, OSHA, and various state UST regulations. Since 1997, Mr. Halil has served as Staff Engineer for the US Navy-Atlantic Division's (NAVFACENGCOM/LANTDIV) ID/IQ CPAF Petroleum, Oils, and Lubricants Remedial Action Contract (POLRAC) No. N62470-93-R-3033. Mr. Halil has participated in twelve Delivery Orders with sites located in Camp Lejeune and Cherry Point, North Carolina. Project types have included engineering design and installation oversight of LNAPL recovery, air sparge, and soil vapor extraction systems. Additional project management activities included oversight of the transportation and disposal of petroleum-impacted groundwater and soil and assisting in the operation and management of groundwater recovery and treatment, air sparge, and soil vapor extraction systems. Mr. Halil has prepared construction drawings for modifications to existing and the installation of new treatment systems, estimates, job schedules, work plans, and other technical submittals, provided engineering support by procuring equipment, and provided field construction management. Other related key projects and responsibilities include:

Served as Field Scientist for the removal and off site disposal of discharges from aboveground storage tanks and associated piping at U.S. Gypsum, Company in Jacksonville, Florida. Mr. Halil was responsible for tank removal assessment, regulatory compliance, project coordination to include: the evaluation of soil sampling and excavation locations, on site analyses of soil samples, monitoring the LNAPL recovery system, generation of site plans, and the presentation of the assessment report.

Served as Senior Field Technician for the assessment of abandoned creosote timbers at Rodman Reservoir, located near Palatka, Florida, for the U.S. Army Corps of Engineers. Responsibilities included the preparation of work plans, historical and environmental data research, scheduling of field activities, site reconnaissance, surveying, permitting, well inventories, collection of soil and groundwater samples, on site testing of the soil samples, measuring physical and chemical properties of surface and groundwater samples, aquifer tests, reviewing and compiling field data and analytical reports, waste management record keeping, and safety administration.

CONTRACTOR PRODUCTION REPORT

(Attach Additional Sheets If Necessary)

Date: 05/21/1999

Contract No.	CTO #	Location	Report No.

Contractor: CH2M HILL Constructors, Inc.

Superintendent:

AM Weather / PM Weather

Max Temp °F / Min Temp °F

JOB SAFETY

Was A Job Safety Meeting Held This Date? (If Yes, attach copy of the meeting minutes)	☐ Yes	☐ No	Total Worked Hours On Job Site This Date:
Were There Any Lost Time Accidents This Date? (If Yes, attach copy of completed OSHA report)	☐ Yes	☐ No	Cumulative Total Of Work Hours From Previous Report:
Was Trenching/Scaffold/HV Electrical/High Work Done? (If Yes, attach statement or checklist showing inspection performed)	☐ Yes	☐ No	Total Work Hours From Start Of Construction:
Was Hazardous Material/Waste Released Into The Environment? (If Yes, attach description of incident and proposed action)	☐ Yes	☐ No	

List Safety Actions Taken Today/Safety Inspections Conducted

☐ Safety Requirements Have Been Met

Equipment/Material Received Today to be Incorporated in Job

Construction and Plant Equipment of Job Site Today. Include Number of Hours Used Today.

Work Performed Today

Work Location and Description	Employer	Number	Trade	Hrs

Remarks

Contractors Superintendent

Date

CONTRACTOR QUALITY CONTROL REPORT

DATE

PREPARATORY PHASE

Preliminary Tasks	Yes	No	N/A	Remarks
1. Plans and specs review complete?	☐	☐	☐	
2. Submittals have been reviewed and approved?	☐	☐	☐	
3. Stored/delivered materials comply with submittals and are properly stored?	☐	☐	☐	
4. Testing plan has been developed and reviewed?	☐	☐	☐	
5. Work method and schedule discussed with Contracting Officer Rep.?	☐	☐	☐	
6. Other preliminary work completed correctly?	☐	☐	☐	

Definable Feature of Work

Work Location:

Personnel Present:

INITIAL PHASE

Preliminary and Ongoing Tasks	Yes	No	N/A	Remarks
1. Sample has been prepared and approved?	☐	☐	☐	
2. Workmanship complies with specifications/industry standards?	☐	☐	☐	
3. Test results are acceptable?	☐	☐	☐	
4. Work complies with contract requirements?	☐	☐	☐	
5. Preliminary work completed correctly?	☐	☐	☐	

Definable Feature of Work

Work Location:

Personnel Present:

Sampling/Testing Performed	Sampling/Testing Company	Site Technician

FOLLOW-UP PHASE

Preliminary and Ongoing Tasks	Yes	No	N/A	Remarks
1. Work complies with contract requirements as approved in initial phase?	☐	☐	☐	

Definable Feature of Work

Work Location:

Personnel Present:

Sampling/Testing Performed	Sampling/Testing Company	Site Technician

CONTRACTOR QUALITY CONTROL REPORT	DATE

Rework items identified today which were not corrected by close of business:

Rework items corrected today which were on the rework items list:

COMMENTS

On behalf of the contractor, I certify that this report is complete and correct, and equipment and material used, and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report.

QC Inspector _____ Date _____

CONTRACTOR QUALITY CONTROL REPORT	DATE

Quality assurance representative's remarks and/or exceptions to this report:

Government Quality Control Manager _____ Date _____

NON-CONFORMANCE NOTICE

115 PERIMETER CENTER PLACE, NE
SUITE 700
ATLANTA, GA 30346
PHONE: 770-604-9095
FAX: 770-604-9183

CTO: _____ NCN NO: _____

CONTRACT: _____ NCN DATE: _____

TO: _____

SUBCONTRACTOR: _____

You are hereby notified that tests and/or inspection indicates that work performed does not conform to the subcontract requirements.

Non-conforming work may be required to be removed and replaced at no cost to CCI. It shall be your responsibility to determine the corrective action necessary and advise the Site Superintendent and Quality Control Inspector (QCI) within 24 hours.

_____ _____
Quality Control Inspector Date

ITEM DESCRIPTION: _____

TEST/INSPECTION: _____

CONTRACT SPECIFICATION/ DRAWING _____

Non-Conformance Description:

Subcontract Requirement:

Subcontractor's proposed corrective action: (Attach additional pages if necessary)

_____ _____ _____
Subcontractor's Representative Title Date

Project Manager's Response: ☐ Concur – Net ☐ Concur – See Requirements ☐ Don't Concur – See Comments

_____ _____
Project Manager Date

Subcontractor's final corrective action: (Attach additional pages if necessary)

_____ _____ _____
Subcontractor's Representative Title Date

Final return of Non-Conformance Notice returned to Project Manager and QCI on:

_____ _____
Quality Control Inspector Date

Copy:
1. RAC
2. File
3. Field File

Rework Items List

Contract Number: N62467-98-D-0995

Contractor: CH2M HILL Constructors, Inc.

CTO Number	Date Identified	Description	Referenced Spec or Drawing	PQCM Action	Resolution	Date Completed

Rev 0: 26JUN98

Appendix D

Technical Specifications

01010 General Paragraphs
01430 Waste Sampling Requirements
02220 General Excavation, Filling, and Backfilling
02223 Transportation and Disposal of Contaminated Material
02571 Pavement Removal and Replacement
03301 Cast-In-Place Concrete

SECTION 01010

GENERAL PARAGRAPHS
FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926-SUBPART V	Power Transmission and Distribution
40 CFR 112	Spill Prevention Control and Countermeasure Regulations

CORPS OF ENGINEERS (COE)

COE EP 1110-1-8	1993 Construction Equipment Ownership and Operating Expense Schedule
COE EM-385-1-1	1992 Safety and Health Requirements Manual

MILITARY STANDARDS (MIL-STD)

MIL STD 461	(Rev C) (Notice 2) Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL STD 462	(Notice 6) Measurement of Electromagnetic Interference Characteristics

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	1989 Safeguarding Construction, Alteration, and Demolition Operations

FLORIDA ADMINISTRATIVE CODE

FAC	Chapter 62-520 and 62-550, Classifications and Water Quality Standards Applicable to the Groundwaters of Florida

1.2 PRECONSTRUCTION SUBMITTALS

Submit the following:

1.2.1 SD-09, Reports

a. Work Plan

1.2.1.1 Work Plan

The Subcontractor shall prepare and submit a Work Plan consisting of the following elements:

a. Narrative

Provide a brief description of each of the following that apply to the specified scope of work:

1. Introduction

   The introduction shall summarize project background information and objectives.

2. Project Organization

   This section shall contain general discussions of service, construction methodology, and general managerial approach to meet project objectives. It shall include a description of equipment and manpower requirements with an explanation of duties and responsibilities for specific personnel.

3. Patent Rights

   Provide copies of all pertinent patents and information describing how claims of and royalties for patent rights will be managed.

4. Description of Work Tasks

   The Subcontractor shall identify and describe the major construction work tasks and construction methods for the scope of work. The description shall include a discussion of good engineering practices included in the plan to ensure system compliance with Spill Prevention Control and Countermeasure Regulations found in 40 CFR 112.

5. Stormwater Basin Demolition, Contaminated Soil Removal, Stormwater Basin Construction

   The Subcontractor shall describe all equipment, construction procedures, labor, and materials associated with the scope of work.

6. Storage, Transportation, and Treatment Requirements

   The Subcontractor shall describe the procedures which will be followed during the handling and disposal of both contaminated materials and non-contaminated materials. All waste handling and disposal shall be in compliance with applicable local, State, and Federal rules and laws for excavation, temporary containment, and disposal. The Subcontractor shall describe field and laboratory analytical methods as well as documentation/manifesting of waste hauling and disposal.

8. CPM Project Schedule

This section shall include the anticipated time line from implementation and operation. Assume for purposes of this section that no permits or regulatory approvals have been previously obtained. A critical path analysis shall be included for the project schedule. Assume that access to the site will be limited to 5 days/week and 10 hours/day.

b. Technical Specifications

Provide, in amendment format, any additional specifications and any modifications to the contract specifications required to accurately describe the materials and work procedures envisioned to satisfy the requirements of this project.

c. Manufacturer's Catalog Data

Provide catalog data for the materials to be used to complete the scope of work.

Provide the following data for each piece of equipment.

1. Materials of Construction
2. Outline Dimensions

d. Health and Safety Plan

Provide a site specific health and safety plan (HASP). The Subcontractor shall describe the implementation of a Health and Safety program conforming to the requirements of local, State, and Federal rules and laws as specifically related to the installation, operation, and monitoring of the air sparge and vapor extraction systems. The HASP shall include but is not limited to the following:

1. Organization structure and names of the Health and Safety officer and names of alternates responsible for Health and Safety.
2. Description of the levels of personal protection to be used for each task.
3. A description of the frequency and types of personal monitoring.
4. Employee training.
5. A description of environmental sampling techniques and instrumentation.
6. Medical Surveillance.
7. Site control measures.
8. Decontamination procedures.
9. Site specific standard Health and Safety operating procedures.
10. Contingency plan.
11. Procedures for compliance with NFPA 241.
12. Material Safety Data Sheets (MSDS)

e. Quality Assurance/Quality Control Plan

This section shall describe QA/QC measures applicable to the project. This shall include any chemical analysis and QC measures to monitor and control the quality of construction activities. A formal QC plan is not required, however the proposer shall identify the salient portions of such a plan and describe specific procedures to meet QC objectives.

f. Sampling and Analysis Plan

This section shall contain the proposed method(s) of sampling and analyses necessary during the construction phase of the project and to verify the effectiveness of remediation at the site. The plan shall indicate if/how field screening will be accomplished and the method of confirmation.

g. Decontamination Procedures

This section shall include all information relevant to decontamination procedures for the various phases of the project.

h. MSDS

Provide all material safety data sheets for all items and substances acquired and used under this contract.

1.2.2 Forwarding Preconstruction Submittals

Within 14 calendar days of issuance of the subcontract, and before procurement, fabrication, or mobilization, submit the preconstruction submittals required in this specification and distribute, as directed by the Engineer, the Work Plan, complete as specified. The Engineer shall review the Work Plan to determine compliance of the Subcontractor's Work Plan with the requirements of the contract documents for this project.

1.2.3 Review Comments

The Subcontractor's Work Plan shall be reviewed. Review comments on the Work Plan shall be resolved, and the Work Plan modified as required. After the correction of the Work Plan, submit three corrected final copies to the Engineer for final review. The Work Plan shall be approved prior to commencement of any other work associated with this project.

1.3 SUBMITTALS

Submit the following:

1.3.1 SD-18, Records

a. As Built Records

b. Environmental Conditions Report

c. Test Results Summary Report

d. Subcontractor Production Report

e. Subcontractor QC Report

f. Rework Items List

g. Permits

h. Subcontractor's Construction Documentation Report

1.3.1.1 As Built Records

Maintain two sets of full size contract drawings and two sets of full size approved shop drawings marked to show any deviations which have occurred, including buried or concealed construction and utility features revealed during the course of construction. Record horizontal and vertical locations of buried utilities. These drawings shall be available for review by the Engineer at any time. At the completion of the work, deliver marked sets of the contract drawings to the Engineer.

1.3.1.2 Environmental Conditions Report

Prior to starting work, perform a preconstruction survey with the Engineer. Take photographs showing existing environmental conditions on and adjacent to the site. Two weeks prior to construction, submit the results of the survey in an Environmental Condition Report to the Engineer.

1.3.1.3 Test Results Summary Report

A summary report of all field tests and laboratory analytical results shall be submitted to the Engineer within 30 days after laboratory receipt of samples.

1.3.1.4 Subcontractor Production Report (CPR)

The CPR shall be prepared and submitted daily to the Engineer.

1.3.1.5 QC Report

The QC Report shall be submitted by the QC Representative to the Engineer every day work is performed, material is delivered, direction is pending, or a labor force is present.

1.3.1.6 Rework Items List

The QC Representative shall deliver a copy of the rework items list to the Engineer on a monthly basis.

1.3.1.7 Permits

Submit copies of the permits required for on site activities to the Engineer.

1.3.1.8 Subcontractor's Construction Documentation Report

Submit to the Engineer upon completion of the project. This report shall include: Introduction, Summary of Action, Final Health and Safety Report, Summary of Record Documents, Field Changes and Contract Modifications, Final Documents, Complete Set of all Field Test and Laboratory Analytical Results, Complete Set of All Data Validation Results, Documentation of Off site Transportation and Treatment of Materials, QC Summary Report, and Final Cost Data. Report shall also include an evaluation of the scope of work, including tanks and materials removed, quantities of contaminated soils treated, contaminants removed, problems encountered, and solutions implemented.

1.4 PROJECT DESCRIPTION

This work includes preparation of a Work Plan and submittals previously described, and providing all equipment, tools, materials, labor, supervision, and transportation necessary to complete the scope of work. Components of this project include: AST, UST, OWS, and contaminated soil removal and disposal, site clean up, and other related work.

1.5 LOCATION

The work shall be located at Naval Air Station, Cecil Field, Jacksonville, Florida. The exact location shall be as indicated by the Engineer.

1.6 DESCRIPTION OF CONTAMINANTS PRESENT

Contaminants at the sites were found to be consistent with fuel contamination and its degradation.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 FACILITIES AND SERVICES

The Subcontractor shall provide all temporary facilities necessary for the proper completion of the work, as necessary and as specified.

3.1.1 Availability of Utilities Services

a. Government utilities for temporary facilities shall be made available without charge.

b. The Engineer shall supply non-potable water required to perform work to the Subcontractor. The water source location will be directed by the Engineer. Work shall be coordinated with the Engineer. The Subcontractor shall provide all piping, hoses, pumps, and connections to transport water to the desired locations on site. The Subcontractor shall also provide a backflow-prevention device at the water source.

c. The Engineer shall supply reasonable amounts of electricity to the Subcontractor for temporary facilities. The Subcontractor shall provide all equipment and labor necessary to connect, convert, and transfer the utilities to the temporary facility. The Subcontractor shall make connections and disconnections.

d. The Subcontractor shall contact Public Works Center in writing to obtain telephone connection. The Subcontractor shall provide all equipment and labor necessary to connect the telephone service to the site. The Subcontractor shall make arrangements for connections, disconnections, and payments.

3.1.2 Storage in Existing Buildings

Storage in existing buildings shall not be allowed.

3.1.3 Open Site Storage Size and Location

The open site available for storage/laydown/decontamination shall be confined to the areas indicated by the Engineer.

3.1.4 Trailers, Storage, and Temporary Buildings

Locate trailers, storage, and temporary buildings where directed and within the indicated operations area. Trailers or storage buildings shall be permitted where space is available subject to the approval of the Engineer. The trailers or storage buildings shall be suitably painted and kept in a good state of repair. Failure of the Subcontractor to maintain the trailers or storage buildings in good condition shall be considered sufficient reason to require their removal. Trailers shall be anchored to resist high winds and must meet applicable State or local standards for anchoring mobile trailers. Trailers shall have a sign in the lower left hand corner of the left door with the following information: company name, address, registration number of trailer or vehicle identification number, location on base, duration of contract or stay on-base, contract

number, local on-base phone number, off-base phone number of main office, and emergency recall person and phone number.

3.1.5 Cleaning Up

During the progress of the remediation, the work area and adjacent areas shall be kept clean and free of all rubbish, surplus materials, and unneeded construction equipment. No material or debris shall be allowed to flow or wash into watercourses, ditches, gutters, drains, or pipes. Upon completion of the work, sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish, and construction facilities from the site.

3.2 RESTRICTIONS ON OPERATIONS

3.2.1 Scheduling

The Subcontractor shall schedule the work as to cause the least amount of interference with normal operations. Work schedules shall be subject to the approval of the Engineer. Permission to interrupt facility roads shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. Notify the Engineer 48 hours prior to starting excavation.

3.2.2 Regular Work Hours

Regular working hours shall consist of an eight hour period established by the Engineer, Monday through Friday.

3.2.3 Work Outside Regular Hours

Work outside regular hours requires Engineer approval. Subcontractor shall submit an application to the Engineer two regular working days prior to the scheduled working date, to allow ample time to enable satisfactory arrangements to be made by the Engineer for inspecting the work in progress. At night, the Subcontractor shall light the different parts of the work in an approved manner.

3.2.4 Security Requirements

The Subcontractor shall comply with the general security requirements Naval Station Mayport, Florida.

3.2.5 Restrictions on Equipment

3.2.5.1 Radio Transmitter Restrictions

The Subcontractor shall conform to the restrictions and procedures for the use of radio transmitting equipment, as directed by the Engineer. Do not use transmitters without prior approval.

3.2.5.2 Electromagnetic Interference Suppression

Electric motors shall comply with MIL STD 461 relative to radiated and conducted electromagnetic interference. A test for electromagnetic interference will not be required for motors that are identical physically and electrically to those that have previously met the requirements of MIL STD 461. An electromagnetic interference suppression test will not be

required for electric motors without commutation or slip rings having no more than one starting contact and operated at 3,600 revolutions per minute or less.

Devices other than electric motors used by the Subcontractor shall comply with MIL STD 461 for devices capable of producing radiated or conducted interference.

Conduct tests on electric motors and the Subcontractors construction equipment in accordance with MIL STD 461 and MIL STD 462. The test location shall be reasonably free from radiated and conducted interference. Furnish the testing equipment, instruments, and personnel for making the tests; a test location; and other necessary facilities.

3.3 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

In conjunction with the Contract Clause "DFARS 252.236-7000, Modification Proposals-Price Breakdown," and where actual ownership and operating costs of construction equipment cannot be determined from Subcontractor accounting records, equipment use rates shall be based upon the applicable provisions of the COE EP- 1110-1-8.

3.4 ACTIONS REQUIRED OF THE CONTRACTOR

3.4.1 Station Permits

The Subcontractor shall obtain all necessary station permits. Permits are required for, but not necessarily limited to, welding and digging. Burning shall not be permitted. Applications are to be submitted to the Engineer. The Subcontractor shall allow seven calendar days for processing of the applications.

3.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of this project, environmental protection as specified herein.

3.5.1 Fire Protection

Comply with COE EM-385-1-1, NFPA 241, and activity fire regulations. Post the activity fire poster in conspicuous locations and at telephones in construction trailers.

-- End of Section --

SECTION 01430

WASTE SAMPLING REQUIREMENTS
FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

PART 1 GENERAL

1.1 SUBMITTALS

Subcontractor shall submit the following statements.

1.1.1 SD-08, Statements

Florida COMPQAPP Number
Sample Log
Chain of Custody

1.1.1.1 Florida Comprehensive Quality Assurance Plan (COMPQAP)

Provide an approved Florida COMPQAP number to Engineer prior to any sampling activities.

1.1.1.2 Sample Log

Provide a detailed summary of all of the disposal, screening, and confirmation samples collected. The Sample Log should include the type of sample collected, the location of the sample, the analyses performed, and the analytical results.

1.1.1.3 Chain of Custody

Provide chain of custody, executed in accordance with approved FDEP COMPQAP to Engineer prior to shipment of samples to laboratory.

1.1.2 SD-12, Field Test Reports

Disposal Sample Analytical Results

1.1.2.1 Disposal Sample Analytical Results

Provide the results of all disposal sample analytical results in a neat and organized manner.

Screening Sample Results

Provide the results of any screening activities in a neat and organized manner.

1.1.2.3 Influent/Effluent Sample Analytical Results

Provide the results of all influent/effluent sample analytical results in a neat and organized manner.

1.2 DEFINITIONS

1.2.1 Disposal Sampling

Disposal sampling shall include all sampling activities conducted to facilitate transport and acceptance of the excavated soil any accumulated wastes to an off-site facility permitted to accept the wastes.

1.2.2 Screening Sample Results

Screening sampling shall include any sampling activities conducted to segregate soil using an Organic Vapor Analyzer/Flame Ionization Detector.

1.2.3 Influent/Effluent Sampling

Influent/effluent sampling shall include all sampling activities conducted to evaluate effectiveness of new storm water Detention pond.

1.3 DESCRIPTION OF WORK

Collect and analyze environmental samples from:

Within the intended limits of the soil excavation, to characterize the soil and accumulated wastes for disposal.
The excavated area during soil excavation to confirm the extent of contaminated soil.
b. The excavated area after contaminated soil has been removed to confirm the removal of all contaminated soil.

1.4 QUALITY ASSURANCE

1.4.1 Waste Sampling

Adhere to all sample acquisition, handling, custody documentation, decontamination, and quality assurance/quality control (QA/QC) requirements and procedures as required by federal, state and local regulations.

1.4.2 Analytical Laboratory

The Subcontractor shall be solely responsible for the execution and accuracy of the waste stream analyses. The Subcontractor shall use a Navy approved laboratory for all soil and waste analyses. All analytical standard methods shall meet, at a minimum, Navy Level C requirements for confirmation sampling and Level C requirements for waste characterization sampling and shall also be in accordance with federal, local and state regulations.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 GENERAL

Supply all personnel, equipment, and facilities to collect and analyze the environmental samples required to characterize the wastes.

3.1.1 Sample Acquisition

Sampling procedures shall be consistent with FDEP Guidelines

SECTION 02220

GENERAL EXCAVATION, FILLING, AND BACKFILLING
FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698	1991 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600 kN-m/m)
ASTM D 2487	1992 Classification of Soils for Engineering Purposes

1.2 SUBMITTALS

1.2.1 SD-02, Manufacturer's Catalog Data

a. Fill Materials
b. Grass Seed

1.2.2 SD-12, Field Test Reports

a. Backfill Compaction Tests

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Provide soil material free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and deleterious or objectionable materials.

PART 3 EXECUTION

3.1 PROTECTION-UNDERGROUND UTILITIES

Location of the existing utilities indicated on the provided drawings are approximate. The Subcontractor shall physically verify the location and elevation of the existing utilities indicated prior to excavation activities.

3.2 EXCAVATION OF CONTAMINATED MATERIALS

3.2.1 General

Excavate to interpolated depths based on the analytical results from the soil samples collected prior to the excavation activities. Backfill with fill material indicated in PART 2 above.

3.2.2 Materials and Equipment

3.2.2.1 General

a. Provide all labor, materials, and equipment necessary to accomplish the work specified in these paragraphs.

b. The Subcontractor shall notify the Engineer at least 48 hours prior to the start of excavation of contaminated soil. The Subcontractor shall stage operations to minimize the time that the contaminated soil is exposed to the weather.

3.2.2.2 Unclassified Excavation

Excavation is unclassified. All excavation shall be completed regardless of the type, nature, or condition of the material encountered.

3.2.3 Excavation Activities

a. Excavate horizontally to the limits of the existing stormwater basin, and vertically to the water table.
b. Construct small berms around the perimeter of the excavation areas to prevent surface water from entering the open excavation.
c. Transfer all excavated soil to a stockpile in the designated storage area prior to placing in trucks for disposal.
d. Contaminated soil shall be loaded into dump trucks for transport without spillage. Care shall be taken during loading operations to minimize the potential for spillage, tracking, or other means of deposition of the contaminated soil outside of the work area. Contaminated soil which become spilled on roads, streets, or other areas outside of the limits of excavation during loading operations shall be immediately cleaned up to the satisfaction of the Engineer.

3.3 FILLING AND BACKFILLING

Fill to pre-excavation elevations. Initial compaction will be obtained by truck traffic during unloading of fill material. Compaction tests will be performed at the discretion of the Construction Representative as outlined in the Work Plan Addendum. Finish to a relatively smooth surface with existing on-site equipment. Soil material used for fill shall be free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and deleterious or objectionable materials.

3.4 COMPACTION

Expressed as a percentage of maximum density. Density requirements specified herein are for cohesionless materials.

3.4.1 General Site

Compact underneath areas designated for vegetation to 85 percent of ASTM D 698.

3.4.2 Paved and Traffic Loading Areas

Compact underneath paved areas or areas designated for vehicular traffic to 95 percent of ASTM D 698.

3.5 FINISH OPERATIONS

3.5.1 Grading

Finish grades as indicated and to match existing adjacent grades. For existing grades that will remain but which were disturbed by Subcontractor's operations, grade as directed.

3.5.2 Seed

Seed shall be bahia. Provide seed at 5 lbs per 1000 square feet. Provide CID A-A-1909, Type I, Class 2, 10-10-10 analysis fertilizer at 25 lbs per 1000 square feet. Provide mulch and water to establish an acceptable stand of grass.

3.5.3 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.6 DISPOSITION OF SURPLUS MATERIAL

Remove from Government property surplus or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber.

-- End of Section --

SECTION 02223

TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

PART 1 GENERAL

1.1 SUBMITTALS

Submit the following in accordance with Section 01010, "General Paragraphs."

1.1.1 SD-08, Statements

a. Treatment Facility Permit

1.1.1.1 Treatment Facility Permit

Verification that the proposed treatment facility is permitted to accept the contaminated material specified, prior to the start of excavation activity.

1.1.2 SD-18, Records

a. Shipment Manifests
b. Delivery Certificates
c. Treatment and Disposal Certificate

1.1.2.1 Shipment Manifests

Copies of manifests and other documentation (to include truck weight tickets) required for shipment of waste materials within 24 hours after removal of waste from the site. All shipment manifests shall be signed by the NS Mayport Environmental Department.

1.1.2.2 Delivery Certificates

Verification that the wastes were actually delivered to the approved treatment facility, within 7 days of shipment.

1.1.2.3 Treatment and Disposal Certificate

Verification that the wastes were successfully treated and remediated to the levels specified herein.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 Materials and Equipment

The Subcontractor shall furnish all labor, materials, and equipment necessary to transport and dispose of contaminated materials in accordance with applicable federal, state, local, and Station requirements.

3.2 Records

The Subcontractor shall originate, use, and maintain the waste shipment records/manifests as required by the Florida Department of Environmental Protection.

3.3 Transportation

The Subcontractor shall be solely responsible for complying with all federal, state, local, and Station requirements for transporting contaminated materials through the applicable jurisdictions and shall bear all responsibility and cost for any noncompliance. Transporter shall meet prior approval of the Engineer. In addition to those requirements, the Subcontractor shall do the following:

a. Inspect and document all vehicles and containers for proper operation and covering.
b. Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.
c. Perform and document decontamination procedures prior to leaving the work site and again before leaving the disposal site.

3.4 Disposal

All contaminated materials removed from the site shall be disposed of in a treatment/disposal facility permitted to accept such materials, and shall meet prior approval of the Engineer.

--End of Section--

SECTION 02571

PAVEMENT REMOVAL AND REPLACEMENT
FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698 1991 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600 kN - m/m))

ASTM D 2487 1992 Classification of Soils for Engineering Purposes

DEPARTMENT OF TRANSPORTATION (DOT)

DOT D-6.1 1988 Uniform Traffic Control Devices for Streets and Highway

FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT)

FDOT RS 1990 Roads and Structures

1.2 SUBMITTALS

Submit the following in accordance with Section C, Part 7, of the Basic Contract.

1.2.1 SD-08, Statements

a. Paving Materials

1.2.1.1 Paving Materials

Submit the mix design, including mixing temperature, for approval. The bituminous mix design shall include a certified laboratory analysis of mix composition with marshall stability value, void content, and flow. After mix design approval, job mixes shall conform to the range of tolerances specified in FDOT RS.

1.3 QUALITY ASSURANCE

1.3.1 Modifications to References

Except as specified herein, work and materials shall be in accordance with the FDOT RS. The provisions therein for method of measurement and payment do not apply, and references to "Engineer" and "State" shall mean the "Engineer".

1.4 BARRICADES AND SIGNALS

Provide and maintain temporary signs, signals, lighting devices, markings, barricades, and channelizing and hand signaling devices in accordance with DOT D-6.1 to protect personnel and new construction from damage by equipment and vehicles until the surface is approved by the Contracting Officer. Work shall be conducted to permit a minimum of one traffic lane on two lane streets, and two traffic lanes on four lane streets, to be open for traffic at all times.

PART 2 PRODUCTS

2.1 PAVING MATERIALS

2.1.1 Bituminous Concrete

FDOT RS, Section 645, Type I-1 for material and mix. Provide crushed stone aggregate for the bituminous mix.

2.1.2 Stone Base Course

FDOT RS, Section 1005 and 1010 for aggregate base course, standard size no. ABC.

2.1.3 Bituminous Tack Coat

FDOT RS, Section 605. Emulsified asphalts shall be diluted at the rate of one part water to one part asphalt.

PART 3 EXECUTION

3.1 PAVEMENT INSTALLATION

The work includes the removal of existing pavement and the provision of new pavement where trenches, pits, and other excavations are made in the existing pavement. Except as otherwise indicated, the restored pavement area shall be the same kind and thickness as previously existed, and shall match and tie into the surrounding pavement in a neat and acceptable manner.

3.2 ROADS AND PARKING AREAS

3.2.1 Pavement Removal

Make a straight line sawcut 12 inches beyond the edge of excavation to a minimum depth of 2 inches for bituminous concrete pavement and 6 inches for portland cement concrete pavement. Portland cement concrete pavement overlaid with bituminous concrete shall be sawcut to a minimum depth of 8 inches. The pavement shall be broken up and removed, along with its base and subgrade, to the depth indicated or specified.

3.2.2 Subgrade Placement

Determine in-place density of existing subgrade, if compacted to 95 percent of ASTM 698 maximum density, no compaction of existing subgrade will be required. Density requirements are for cohesionless materials. When cohesive materials are encountered or used, density requirements may be reduced by 5 percent. Cohesionless materials are ASTM D 2487 classified as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero. Cohesive materials are ASTM D 2487 classified as GC, SC, ML, Cl, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

3.2.3 Stone Base Placement

Provide a stone base course a minimum of 8 inches thick, unless indicated otherwise. Place the stone base in two equal lifts, with each lift compacted to 95 percent ASTM 698 maximum density. At the Subcontractor's option, bituminous concrete may be provided in lieu of stone base material.

3.2.4 Bituminous Concrete Placement

Provide a tack coat on the exposed edges of the cold joints and on the bituminous concrete base when provided, and provide a minimum 2-inch thick bituminous concrete surface course, unless indicated otherwise, in accordance with FDOT RS. Place in maximum of 2-inch lifts with each lift compacted to 96 percent of maximum laboratory density. The finished surface shall be uniform in texture and appearance and free of cracks and creases.

3.2.5 Portland Cement Concrete Pavement

Provide reinforcing to match existing reinforcing. The concrete surface shall be struck off, screened, tamped, and finished to the same surface elevation and texture as the adjacent existing concrete. Cure concrete for 7 days. Maintain existing joint patterns.

-- End of Section --

SECTION 03301

REINFORCED CONCRETE
FIRE FIGHTER TRAINING CENTER STORM WATER DETENTION POND DEMOLITION AND REPLACEMENT

03/00

3000PART I GENERAL

1.1 REFERENCES

The following is a list of standards which may be referenced in this section:

1.1.1 American Concrete Institute (ACI):

a. 301, Specifications for Structural Concrete for Buildings.
b. 305R, Hot Weather Concreting.
c. 306R, Cold Weather Concreting.
d. 318/318R, Building Code Requirements for Reinforced Concrete.
e. 347, Formwork for Concrete.

1.1.2 American Society for Testing and Materials (ASTM):

a. A497, Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
b. A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
c. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
d. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
e. C94, Standard Specification for Ready-Mixed Concrete.
f. C150, Standard Specification for Portland Cement.
g. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
h. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
i. C494, Standard Specification for Chemical Admixtures for Concrete.
j. C618, Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
k. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
l. Concrete Reinforcing Steel Institute (CRSI):
    1. Manual of Standard Practice.
    2. Recommended Practice for Placing Reinforcing Bars.

1.2 SUBMITTALS

1.2.1 SD-02, Manufacturer's Catalog Data

a. Concrete Curing Compound
b. PVC Waterstop
c. Hydrphylic Waterstop Data

1.2.2 SD-08, Statements

a. Concrete Mix Design
b. Reinforcement
c. Curing Compound Data, Including Manufacturer's Application Instructions

1.3 SD-12, FIELD TEST REPORTS

a. Slump Tests
b. Air Content
c. Compressive Strength Tests
d. Post-Construction Leak Testing
e. Ready-Mix Delivery Tickets

1.4 QUALITY ASSURANCE

1.4.1 Formwork: Unless otherwise specified, follow the recommendations of ACI 347.

1.4.2 Concrete and Reinforcement: Unless otherwise specified, meet the requirements of ACI 301 and 318/318R.

1.4.3 Hot Weather Concreting: Conform to ACI 305R.

1.4.4 Cold Weather Concreting: Conform to ACI 306R.

1.5 ENVIRONMENTAL REQUIREMENTS

1.5.1 Do not place Concrete when the ambient temperature is below 40 degrees F or approaching 40 degrees F and air temperature less than 40 degrees F for the first 7 days, without special protection to keep Concrete above 40 degrees F.

PART 2 PRODUCTS

2.1 CONCRETE

2.1.1 Ready-mixed meeting ASTM C94, Option A.

2.1.2 Portland Cement: ASTM C150, Type I.

2.1.3 Admixtures:

a. Air-Entraining: ASTM C260.
b. Water-Reducing: ASTM C494, Type A or D.
c. Fly Ash: ASTM C618, Class C or F.
d. Color Pigments: Inert mineral or metaloxide pigments, either natural or synthetic; resistant to lime and other alkalies.

2.1.4 Mix Design:

a. Minimum Allowable 28 day Compressive Field Strength: 4,000 psi when cured and tested in accordance with ASTM C31 and C39.
b. Coarse Aggregate Size: 1 inch and smaller.
c. Slump Range: 3 to 5 inches.
d. Air Entrainment: Between 3 and 6 percent by volume.
e. Water Reducers: Use in concrete without plasticizers.
f. Maximum Water To Cement Ratio: 0.49.

2.1.5 Mixing: Minimum 70 and maximum 270 revolutions of mixing drum. Nonagitating equipment is not allowed.

2.2 REINFORCING STEEL

2.2.1 Deformed Bars: ASTM A615, Grade 60.

2.2.2 Welded Wire Fabric: ASTM A497.

2.3 ANCILLARY MATERIALS

2.3.1 Expansion Joint Filler: ASTM D994, 1/2-inch thick, or as shown.

2.3.2 Nonshrink Grout:

a. Color: To match concrete.
b. Manufacturers and Products:
1. Master Builder Co., Cleveland, OH; Master Flow 928.
2. Euclid Chemical Co., Cleveland, OH; Hi-flow Grout.

2.3.3 Curing Compound:

a. Material: Solvent based containing chlorinated rubber solids in accordance with ASTM C309, with additional requirement that the moisture loss not exceed 0.030 gram per centimeter squared per 72 hours.
b. Manufacturers and Products:
1. Master Builders Co.; Masterkure CR.
2. Euclid Chemical Co.; Euco Super Floor Coat.

2.3.4 Clear Floor Hardener (Surface-Applied): Colorless, aqueous solution of zinc and magnesium fluosilicate with a minimum 2 pounds of crystals per gallon.

a. Manufacturers:
1. Master Builders, Co., Cleveland, OH.
2. A. C. Horn, Inc., North Bergen, NJ.
3. Sonneborn, Minneapolis, MN.

PART 3 EXECUTION

3.1 FORMWORK

3.1.1 Form Materials:

a. Use hard plastic finished plywood for exposed areas, and new shiplap or plywood for unexposed areas.
b. Earth cuts may be used for forming footings.

3.1.2 Form Ties:

a. Fixed conical or spherical type inserts that remain in contact with forming material and allow for dry packing of form tie holes.
b. Ties shall withstand pressures and limit deflection of forms to acceptable limits.
c. Wire ties are not acceptable.

3.1.3 Construction:

a. In accordance with ACI 347.
b. Make joints tight to prevent escape of mortar and to avoid formation of fins.
c. Brace as required to prevent distortion during concrete placement.
d. On exposed surfaces locate form ties in uniform pattern or as shown.
e. Construct so ties remain embedded in the wall with no metal within 1-inch of concrete surface when forms, inserts, and tie ends are removed.

3.1.4 Form Removal:

a. Remove after concrete has attained 28 day strength, or approval is obtained in writing from ENGINEER.
b. Remove forms with care to prevent scarring and damaging the surface.

3.2 PLACING REINFORCING STEEL

3.2.1 Unless otherwise specified, place reinforcing steel in accordance with CRSI Recommended Practice for Placing Reinforcing Bars.

3.2.2 Splices and Laps:

a. Top Bars: Horizontal bars placed such that 12 inches of fresh concrete is cast below in single placement.
b. Horizontal wall bars are considered top bars.
c. Lap top bars 42 diameters or minimum 24 inches.
d. Lap all other bars 30 diameters or minimum 18 inches.
e. Tie splices with 18-gauge annealed wire as specified in CRSI Standard.

3.3 PLACING CONCRETE

3.3.1 Place concrete in accordance with ACI 301.

3.3.2 Prior to placing concrete, remove water from excavation and debris and foreign material from forms. Check reinforcing steel for proper placement and correct discrepancies.

3.3.3 Before depositing new concrete on old concrete, clean surface using sandblast or bushhammer or other mechanical means to obtain a 1/4-inch rough profile, and pour

a cement-sand grout to minimum depth of 1/2-inch over the surface. Proportion 1 part cement to 2.5 parts sand by weight.

3.3.4 Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or steel above, and in layers not over 2 feet deep. Place within 1-1/2 hours after adding cement to mix.

3.3.5 8 feet maximum vertical drop to final placement, when not guided with chutes or other devices to prevent segregation due to impact with reinforcing.

3.4 COMPACTION

3.4.1 Vibrate concrete as follows:

a. Apply approved vibrator at points spaced not farther apart than vibrator's effective radius.
b. Apply close enough to forms to vibrate surface effectively but not damage form surfaces.
c. Vibrate until concrete becomes uniformly plastic.
d. Vibrator must penetrate fresh placed concrete and into previous layer of fresh concrete below.

3.5 CONSTRUCTION JOINTS

3.5.1 Locate as shown or as approved.

3.5.2 Maximum Spacing Between Construction Joints: 40 feet.

3.6 FINISHING

3.6.1 Floor Slabs and Tops of Walls:

a. Screed surfaces to true level planes.
b. After initial water has been absorbed, float with wood float and trowel with steel trowel to smooth finish free from trowel marks.
c. Do not absorb wet spots with neat cement.

3.6.2 Unexposed Slab Surfaces: Screed to true surface, bull float with wood float, and wood trowel to seal surface.

3.6.3 Tolerances: Floors shall not vary from level or true plane more than 1/4-inch in 10 feet when measured with a straightedge.

3.6.4 Exterior Slabs and Sidewalks:

a. Bull float with wood float, wood trowel, and lightly trowel with steel trowel.
b. Finish with broom to obtain nonskid surface.
c. Finish exposed edges with steel edging tool.
d. Mark walks transversely at 5-foot intervals with jointing tool.

3.7 FINISHING AND PATCHING FORMED SURFACES

3.7.1 Cut out honeycombed and defective areas.

3.7.2 Cut edges perpendicular to surface at least 1-inch deep. Do not feather edges. Soak area with water for 24 hours.

3.7.3 Patch with Master Builders EMACO R310 or approved equal.

3.7.4 Finish surfaces to match adjacent concrete.

3.7.5 Keep patches damp for minimum 7 days or spray with curing compound to minimize shrinking.

3.7.6 Fill form tie holes with Nonshrink Grout.

3.8 PROTECTION AND CURING

3.8.1 Protect fresh concrete from direct rays of sunlight, drying winds, and wash by rain.

3.8.2 Keep concrete slabs continuously wet for a 7 day period. Intermittent wetting is not acceptable.

3.8.3 Use curing compound only where approved by ENGINEER. Cure formed surfaces with curing compound applied in accordance with manufacturer's directions as soon as forms are removed and finishing is completed.

3.8.4 Remove and replace concrete damaged by freezing.

3.9 FLOOR HARDENER

3.9.1 Use where noted or scheduled.

3.9.2 Follow manufacturer's application instructions.

3.10SAMPLING AND TESTING

3.10.1 Evaluation of Concrete Field Strength: In accordance with ACI 318/318R. Sampling

3.10.2 ASTM C 172. Collect samples of fresh concrete to perform tests specified.

3.10.3 Testing

a. Slump Tests
ASTM C 143. Take samples during concrete placement. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement and for each batch (minimum) or every 10 cubic yards (maximum) of concrete. Minimum Slump Range: 3 to 5 inches.

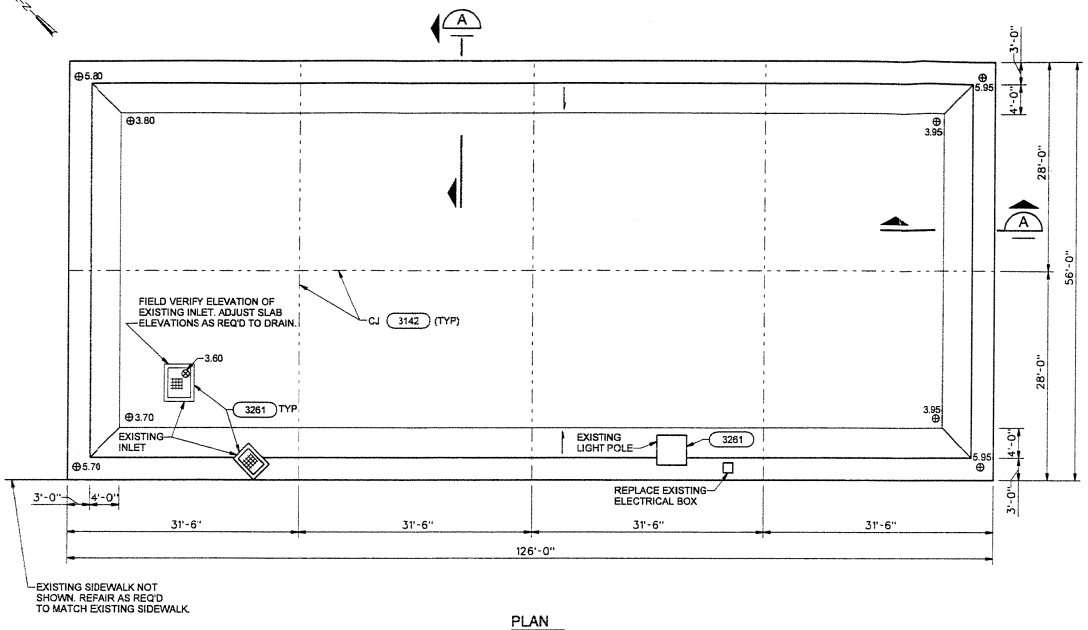
b. Air Content
ASTM C 173 or ASTM C 231. Test air-entrained concrete for air content at the same frequency as specified for slump tests. Minimum Air Entrainment: Between 3 and 6 percent by volume

c. Compressive Strength
ASTM C 172. Test compressive strength of concrete by three cylinders (7-day, 28-day, 28-day) at a frequency of every 10 cubic yards or at a minimum every batch received. Minimum Allowable 28 day Compressive Field Strength: 4,000 psi when cured and tested.

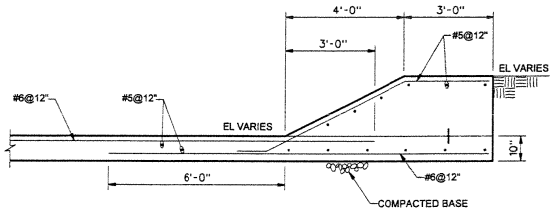
d. Post Construction Leak Testing

1. Fill Detention pond to 6" below top of concrete
2. Maintain this level for 72-hours prior to starting test
3. Measure precipitation and and evaporation by floating a partially filled transparaent calibrated open top container
4. Continue leakage test for 72 hours
5. Volume loss shall not exceed 0.075 percent of contained lquid volume
6. If pond fails leakage test, pressure inject all cracks and joints with a hydrophobic chemical grout and retest.

END OF SECTION



PLAN
1/8" = 1'-0"



SECTION A
1/2" = 1'-0"

NOTES:

1. COMPACT SUBGRADE TO 95% RELATIVE COMPACTION PER ASTM 698.
2. CONCRETE: MEET REQUIREMENTS OF AC I 301

   f'c=4000 psi
   MAXIMUM WATER/CEMENT RATIO=.49
   MIX DESIGN ASTM C94
   SLUMP 2-4 INCHES
3. REINFORCING STEEL

   ASTM 615 GRADE 60
4. CURING COMPOUND

   ASTM C309
5. PVC WATERSTOP

   GREENSTREAK PLASTIC PRODUCTS; NO. 3250 / GRD: STYLE 732
6. HYDROPHILIC WATERSTOP

   GREENSTREAK PLASTIC PRODUCTS; HYDROTITE CJ-1020-2K WITH LEAKMASTER LV-1 ADHESIVE AND SEALANT.
7. PLACE CONCRETE IN A CHECKER BOARD PATTERN. ALLOW 7 DAYS BEFORE PLACING ADJACENT CONCRETE.
8. WATER LEAKAGE TEST

   A: FILL RETENTION POND TO 6" BELOW TOP OF CONCRETE.

   B: MAINTAIN THIS LEVEL FOR 72 HOURS PRIOR TO STARTING TEST.

   C: MEASURE PRECIPITATION AND EVAPORATION BY FLOATING A PARTIALLY FILLED, TRANSPARENT, CALIBRATED OPEN TOP CONTAINER.

   D: CONTINUE LEAKAGE TEST FOR 72 HOURS.

   E: VOLUME LOSS SHALL NOT EXCEED 0.075 PERCENT OF CONTAINED LIQUID VOLUME.

   F: IF PCND FAILS LEAKAGE TEST, PRESSURE INJECT ALL CRACKS AND JOINTS WITH A HYDROPHOBIC CHEMICAL GROUT AND RETEST.
9. ASSUME GROUNDWATER IS AT ELEVATION 5.00
10. MAINTAIN EXCAVATION FREE OF WATER
11. LOCATE ℄ OF RETENTION POND TO MATCH EXISTING RETENTION POND ℄

DSGN B. JOHNSON DR L. GOODKIN CHK M. FORKEY APVD B. JOHNSON	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL	MAYPORT NAVAL STATION DETENTION POND	STRUCTURAL PLAN AND SECTION	SHEET DWG S-1 DATE 3/13/00 PROJ 156087.20.01.03.30

50 Plot dgn

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REINFORCING STEEL:

1. THE MINIMUM REINFORCING FOR ALL CONCRETE WALLS AND SLABS SHALL BE AS FOLLOWS:

WALL THICKNESS	REINF EACH WAY	LOCATION
6"	#4@12"	CENTERED
8"	#5@12"	CENTERED
10"	#4@12"	EACH FACE
12"	#5@12"	EACH FACE

PROVIDE LARGER SIZES AND MORE REINFORCING IN ALL SECTIONS OF CONCRETE WHERE REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS.

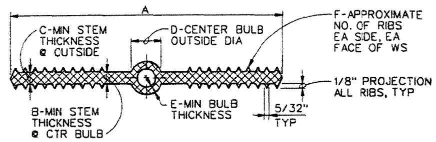
2. CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
   - WHEN PLACED ON GROUND: —— 3"
   - ALL OTHER CONCRETE SURFACES:
     - #5 BAR OR SMALLER —— 1 1/2"
     - #6 BAR OR LARGER —— 2"
3. REFER TO WALL CORNER AND WALL INTERSECTION REINFORCING DETAIL. IN GENERAL, THE WALL CORNER REINFORCING SIZES AND SPACINGS SHALL BE CALLED OUT ON THE PLANS AND REFERENCED TO THESE DETAILS AND THE TYPICAL HORIZONTAL WALL REINFORCING SHALL LAP WITH THE HORIZONTAL REINFORCING.
4. ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN LATEST EDITION OF ACI 318.
5. ALL WALL CORNER AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH COLUMNS OR PILASTERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS, AS INDICATED ELSEWHERE ON THIS SHEET.
6. VERTICAL WALL BARS SHALL BE LAPPED WITH DOWELS FROM BASE SLABS AND EXTENDED INTO THE TOP FACE OF ROOF SLABS AND LAPPED WITH TOP SLAB REINFORCEMENT. PROVIDE A MINIMUM OF TWO FULL HEIGHT VERTICAL BARS WITH MATCHING DOWELS AT WALL ENDS, CORNERS AND INTERSECTIONS WITH SIZE TO MATCH TYPICAL VERTICAL REINFORCING STEEL SHOWN OR REQUIRED BY NOTES ABOVE.
7. UNLESS INDICATED OTHERWISE, CONTRACTOR MAY SPLICE CONTINUOUS SLAB OR LONGITUDINAL BEAM BARS AT LOCATIONS OF HIS CHOOSING, EXCEPT THAT TOP BAR SPLICES SHALL BE LOCATED AT MIDSPAN AND BOTTOM BAR SPLICES HALL BE LOCATED AT SUPPORTS. ALL REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENT:

CONCRETE DESIGN STRENGTH = 4,000 PSI GRADE 60 REINFORCING STEEL										
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LENGTH										
SPACING<6"	TOP BAR *	1'-4"	2'-0"	3'-0"	4'-0"	5'-10"	6'-8"	7'-6"	8'-4"	9'-2"
	OTHER BAR	1'-4"	1'-7"	2'-3"	3'-1"	4'-6"	5'-2"	5'-10"	6'-5"	7'-1"
SPACING≥6"	TOP BAR *	1'-4"	1'-7"	2'-0"	2'-5"	3'-6"	4'-0"	5'-0"	6'-0"	7'-1"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-7"	5'-5"
EMBEDMENT LENGTH										
SPACING<6"	TOP BAR *	1'-0"	1'-7"	2'-3"	3'-1"	4'-6"	5'-2"	5'-10"	6'-5"	7'-1"
	OTHER BAR	1'-0"	1'-2"	1'-9"	2'-5"	3'-6"	4'-0"	4'-6"	5'-0"	5'-5"
SPACING≥6"	TOP BAR *	1'-0"	1'-3"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-7"	5'-5"
	OTHER BAR	1'-0"	1'-0"	1'-2"	1'-5"	2'-1"	2'-5"	2'-11"	3'-7"	4'-2"

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

8. CONTINUOUS WATERSTOP, AS SPECIFIED, SHALL BE INSTALLED IN ALL CONSTRUCTION JOINTS IN WALLS OF WATER HOLDING BASINS AND CHANNELS, EXCEPT WHERE INDICATED OTHERWISE.
9. PROVIDE AND INSTALL SELECT GRANULAR MATERIAL AS SPECIFIED UNDER ALL SLABS AND FOOTINGS TO UNDISTURBED EARTH WITH MINIMUM THICKNESS EQUAL TO 6", UNLESS SPECIFIED OTHERWISE NOTED.
10. INCREASE LAP LENGTHS SHOWN ABOVE FOR TOP BARS BY 30% AND LAP LENGTHS FOR OTHER BARS BY 50% WHEN EPOXY COATED REINFORCING IS SPECIFIED FOR BARS.

3000



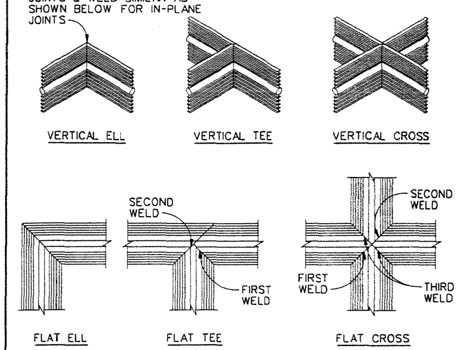
SIZE	A	B	C	D	E	F
4"x3/16"	4"	3/16"	3/16"	3/4"	1/4"	4
6"x3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
9"x3/8"	9"	3/8"	3/8"	1"	1/4"	8

NOTES:

1. NON-ROUND CENTER BULBS SHALL HAVE A MINIMUM OUTSIDE DIMENSION OF 'D'.
2. SEE SPLICE DETAIL (3111)
3. BULB TYPE WATERSTOP SHOWN IS REQUIRED FOR EXPANSION AND CONTROL JOINTS. SIMILAR WATERSTOPS WITHOUT CENTER BULB MAY BE SUBSTITUTED AT CONSTRUCTION JOINTS.
4. USE 6 INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN OTHERWISE.

PLASTIC WATERSTOP
NTS
3101

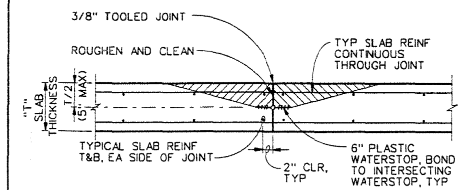
MITER CORNERS OF VERTICAL JOINTS & WELD SIMILAR AS SHOWN BELOW FOR IN-PLANE JOINTS



NOTES:

ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.

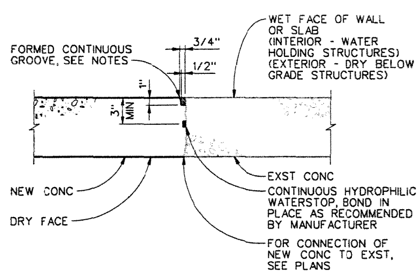
WATERSTOP JOINTS
NTS
3111



NOTES:

FOR CONCRETE PLACEMENT AROUND WATERSTOP SEE (3133).

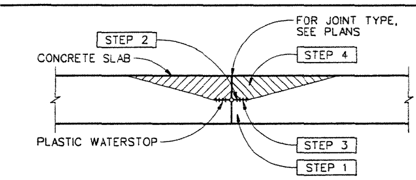
BASE SLAB CONSTRUCTION JOINT
NTS
3142



NOTES:

1. WAIT UNTIL AFTER LEAKAGE TEST AND NEW CONCRETE IS A MINIMUM 28 DAYS OLD PRIOR TO GROUTING GROOVE.
2. ROUGHEN AND CLEAN SURFACES OF GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING.
3. SATURATE AREA FOR 24 HOURS PRIOR TO GROUTING.
4. DRY PACK WITH TYPE NON-SHRINK GROUT.
5. USE STEEL HAMMER AND STEEL TOOL TO DENSELY PACK GROUT INTO GROOVE.
6. WATER CURE GROUT FOR 4 DAYS MINIMUM.

HYDROPHILIC/GROOVE WATERSTOP
NTS
3103



NOTES:

PLACEMENT SEQUENCE SHOWN REQUIRED ON BOTH SIDES OF JOINTS, IN ALL CONCRETE SLAB AND FOOTING POURS WITH HORIZONTALLY PLACED PLASTIC WATERSTOPS.

STEP 1

PLACE CONCRETE BELOW WATERSTOP FIRST, REMOVE ALL AIR VOIDS BY VIBRATING THOROUGHLY.

STEP 2

TO CONFIRM THERE ARE NO AIR VOIDS, LIFT WATERSTOP. A CONTINUOUS IMPRESSION OF THE WATERSTOP, INCLUDING EDGE OF BULB, SHOULD BE VISIBLE IN THE FRESH CONCRETE. CONTINUE THIS PROCEDURE ALONG THE ENTIRE POURED JOINT, END TO END. IF A CONTINUOUS IMPRESSION IS CONFIRMED, PROCEED WITH STEP 4. IF A VOID LARGER THAN 1/4 INCH IN DIAMETER IS PRESENT ANYWHERE IN THE WATERSTOP IMPRESSION, PROCEED WITH STEP 3.

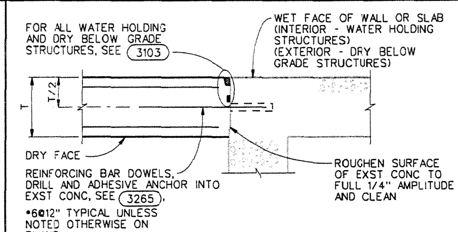
STEP 3

IF A VOID LARGER THAN 1/4 INCH IN DIAMETER IS PRESENT IN THE WATERSTOP IMPRESSION, ADDITIONAL CONCRETE SHALL BE PLACED UNDER THE WATERSTOP, VIBRATED, AND STEP 2 REPEATED.

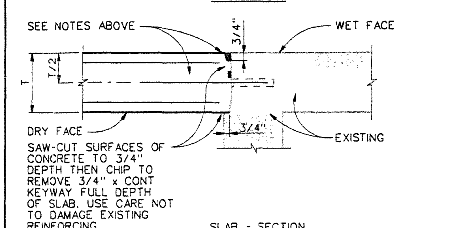
STEP 4

FINISH PLACING CONCRETE ABOVE THE WATERSTOP TO TOP OF SLAB.

CONCRETE PLACEMENT SEQUENCE
NTS
3133



WALL - PLAN



SLAB - SECTION

CONNECTION OF NEW CONCRETE TO EXISTING
NTS
3261

DSGN B. JOHNSON						VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	
DR L. GOODKIN							
CHK M. FORKEY							
APVD B. JOHNSON	NO.	DATE	REVISION	BY	APVD		

CH2MHILL

MAYPORT NAVAL STATION
DETENTION POND

STRUCTURAL
STANDARD DETAILS

SHEET
DWG S-2
DATE 3/13/00
PROJ 156087.20.01.03.30

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